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A PHYSICAL INQUIRY INTO THE CAUSE and CURE OF FEVERS.

By GARRETT HUSSEY. M. D.

Est animorum, ingeniorumque nostrorum naturale quoddam quasi pabulum, contemplatio consideratioque naturæ. CICERO.

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THE

PREFACE.

IN general, people write as they think, and act as they write; ſo that it is rare to find a man, wrong in theory, and right in practice. The phyſician, then, who wiſhes to ſucceed in the latter, ſhould take care to eſtabliſh the former upon ſure principles: and that he may not be biaſſed, through a partiality in his own favour, he ought to appeal to the tribunal of competent judges. At all events, a benefit muſt ariſe. For if it be approved, the publication will not fail of being ſer-

viceable to others; but, if cenſured, it will convince the author, that he has neither reaſoned nor acted properly: He muſt then reviſe and correct his errors.

WHEN the heart is to be ſoothed, or the ſenſes to be engaged, ſhort and ſpirited ſtrokes are always the moſt ſucceſsful: and in many caſes, where an author omits what cannot be caſt into an elegant mould, he is ſure to pleaſe, even though he ſhould not inſtruct. But a medical writer has no ſuch privileges. He muſt adhere to the particular nature of his ſubject; and, at the expence of ſtyle, develop it fully. He muſt introduce the terms, which

which are adapted to his profeſſion, and which do not well incorporate with the purity of any language. In a word, he muſt give up the praiſe of elegance, and content himſelf with being clear.

THERE are ſome, who condemn all ſorts of theory; and, becauſe they cannot reduce every thing to a mathematical clearneſs, become ſceptical in the midſt of knowledge, and baniſh all reaſoning from their writings. Others, again, attempt to fly, when, in truth, they are ſcarce able to creep, and become dogmatical in the very midſt of ignorance. Theſe are oppoſite extremes; and, ſurely, there is

a middle path. We may reaſon upon the ſenſible qualities of things, without rejecting demonſtration, as the former do; and eſtabliſh a theory upon experience, without raiſing, like the latter, ſyſtems only of imagination.

It is a common remark, that a man may know a great deal of geometry, of chymiſtry, and phyſical experiments; and yet know very little of the theory, and ſtill leſs of the practice, of phyſick. Nor is there any reaſon to wonder at it; ſince the laws which govern a living frame, are of a peculiar nature, and no way ſubject to our diſcipline and fetters. I would not, however,

however, have it underſtood, that an acquaintance with theſe ſciences is unneceſſary for a phyſician to cultivate. On the contrary, the more he is converſant with them, the more, I am ſure, he is qualified to benefit by experience, and to make uſeful diſcoveries in his profeſſion. Whatever enlarges and ſtrengthens the mind, communicates to the judgment a degree of philoſophical ſolidity; an advantage, which cannot well be acquired, without an early application to academical ſtudies.

THOUGH I have taken no ſmall pains to preſerve ſome order; yet I fear my materials are not diſpoſed ſo, as to abide the

teſt of a captious, unforgiving examination. There is a certain method, a preciſion in ſome parts, and a fulneſs in others, which I dare not promiſe a ſevere critic. But, I truſt, an indulgent allowance will be made by thoſe, who are accuſtomed to eſſays of this kind, and well informed of the difficulties, that ſtand in the way. I only aſk one favour; that, independently of the whole, no part of the following diſſertation ſhould be judged of by itſelf.

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INTRODUCTION.

BY way of diſtinction, the name of Blood-veſſels is given to the tubes, which convey the blood to the ſeveral parts of the frame: and the branches, which ſhoot from them, are called, ſome, Lymphatics; others, Nerves; and ſo on, according to the particular fluids, which they receive, and the particular uſes, which they are deſtined to anſwer. The wonderful ſyſtem, which is formed by an aſſemblage of theſe veſſels, can never be, altogether, unravelled by any induſtry of ours: for the greateſt part eſ-

capes the niceſt inquiſition of our ſenſes; nor can even our imagination form an idea of their minuteneſs. This much, however, is certain, that, to conſtitute perfect health, it is neceſſary, that the ſmall, as well as the great, ſhould be entirely free from any kind of obſtruction. And for this purpoſe, many a condition muſt concur. For inſtance, the veſſels themſelves ſhould be in a middle ſtate between the extreme of relaxation, and that of tenſion: and the different fluids, that pervade them, ſhould not be too thick, or too thin; nor ſhould their motion be too ſlow, or too rapid.

I am ſatisfied, that, without any ſenſible detriment, ſome of theſe conditions may be, in a ſlight degree, wanting. For example, though ſome of the infinitely ſmall veſſels ſhould not be able to perform their functions rightly, no inconvenience is perceived, becauſe

becauſe the neighbouring veſſels ſupply the deficiency. But in proportion as the embarraſſment increaſes, the health begins to decline; and according to the ſituation of the affected part, the evil ſhows itſelf under different forms. Hence ariſes that variety of diſeaſes, which we obſerve in the nerves, in the lymphatics, and in many of the excretory veſſels.

These diſorders are generally of the chronical kind; and are the more ſupportable, as the influence of their cauſe is further removed from the circle, in which the blood moves. But the ſcene changes, when the obſtacles are ſuddenly multiplied, and drawn ſo near, as to be formed in the very cavity of the blood-veſſels. The whole frame is then thrown into confuſion; and life, which certainly depends upon the circulation of the blood, is more or leſs in danger, as the obſtructions

tions are more or leſs general, and obſtinate.

The reſiſtance, which is made to a regular progreſſion of the fluids, is in effect made to the action of the heart. When this organ, which is the main ſpring of animal motion, cannot fully diſcharge its contents, as at this time it ſurely cannot, it is a law, founded upon the ſtructure of its parts, that, by way of compenſation, it ſhould be ſtimulated into quicker, and, until it be fairly overpowered, ſtronger contractions. In this exertion of the heart on one ſide, and the oppoſition it meets with on the other, in this conflict it is, that we are to find, what comprehends the generical nature of a Fever. As to the ſpecific difference, of which I ſhall ſhow hereafter an abſolute neceſſity of our being rightly informed, I have no doubt but that it is owing to the changes, which are induced in the circulating fluids; and which,

which, though different from one another, have one thing in common, that of diſturbing the freedom of circulation.

The only fluids, that I know of, which have no outlets, and whoſe office therefore it is, in a conſtant rotation, to move from, and to, the heart, are the globular parts of the blood, the ſerum, and the chyle. Not that this laſt is deſtined to make many a round; but experiments ſhew, that it muſt make ſome, before it be entirely diveſted of its original nature. It is of this fluid that the reſt are formed by a wonderful mechaniſm of the body, particularly by that of the lungs; and though a great part of the ſerum gets into the lymphatics, and then aſſumes the name of Lymph, yet a great part rolls on continually with the Blood. Beſides, after yielding ſuch refined particles, as anſwer the purpoſe of nutrition, the lymph itſelf

moves on to the heart, and being there refreſhed, and fitted for the ſame journey as before, is again propelled forwa s in company with the blood.

Now the only changes, that can be made in theſe fluids, ſo as to render them unfit for a due circulation, may, in my opinion, be reduced to three; a viſcidity of the chyle; a coagulation of the ſerum; and a broken texture of the blood-globules. It may ſeem, that the two firſt changes bear the ſame ſignification. There is, however, a real difference. For when the chyle is viſcid, all the reſt of the humours muſt be poor and ropy: whereas when the ſerum is coagulated, the blood-globules have a great degree of firmneſs. Again, the fibres are weak and relaxed in the firſt caſe; but in the ſecond, they are ſtrong and elaſtic. Beſides, the chyle, though viſcid, can never be made hard; whilſt the

the ſerum may be coagulated ſo, as nearly to equal the conſiſtency of leather.

UPON this principle, we may ſee the reaſon, why, in our language, the name of buff is given to that whitiſh ſubſtance, which, in ſome morbid caſes, appears on the ſurface of the blood, after it is ſuffered, for a while, to ſettle in a tea-cup. That this is no other than a coagulated ſerum, is evident from hence, that a ſubſtance, like it, may be produced, if, at a time, when the ſerum has its natural degree of fluidity and colour, it be ſubmitted to trials, capable of coagulating it. The only difference is, that the ſize, which we make in this manner, has not that degree of toughneſs, obſervable in that, which is made in the body. Nor ſhould we be ſurprized at this; ſince the conſtruction of the human frame, and the action of the organs, which compoſe it, ex-

ceed by far all that art can poſſibly do.

If what I advance, relative to this buff-like ſubſtance, were true, it may be aſked, firſt, why blood, taken from arteries, ſhould not appear as ſizy, as that which is taken from veins? and ſecondly, why the ſame ſizineſs ſhould not abound in the lymph, ſo as to cauſe glandular ſwellings? To anſwer the firſt queſtion, it is neceſſary to obſerve what paſſes, when boiling water is poured upon the ſerum; or, upon what is analogous to it, the white of an egg. A coagulation inſtantly enſues, and if we wiſh to prevent it, in a great meaſure, we may certainly ſucceed, by ſtirring up the mixture with a little dexterity and quickneſs. In doing this, we imitate what the arteries do in a ſuperior degree by their pulſation; and where this dividing force is wanting, as in the veins it ſurely is, it is natural,

that

that the particles of the ſize ſhould have more liberty to unite together.

The anſwer to the ſecond queſtion is no leſs obvious. For the orifice of the lymphatics, though wide enough to receive the fineſt and moſt fluid part of the ſerum, is too narrow to receive that, which is groſs, or rendered, by any means, ſizy. It is on this account, that, except in diſorders, where the capacity of the vaſcular ſyſtem is enlarged, or where the texture of the humours is broken, the blood never gets into the lymphatic veſſels. And, indeed, to conclude, becauſe no large glandular ſwellings appear, when the blood is ſizy, that therefore the lymph is not at all affected, is, I think, to conclude rather too haſtily: ſince, if we conſult experience, we ſhall find, that the complaints, which ſome people have, and which they date from the time they had

had a fever, are owing to lymphatic obſtructions, that remain, either becauſe the fever had been badly treated, or that there had been but an imperfect criſis.

WITH regard to the third change, which conſiſts in a broken texture of the blood, it differs widely from the two I have already mentioned, though not ſo much from the firſt, as from the ſecond. For when the ſerum is coagulated, the blood-globules muſt be ſo too, ſince it is impoſſible to affect the one without the other. Hence it is, that, when a thick inflammatory cruſt appears, the craſſamentum, which lies under it, has an extraordinary degree of firmneſs. But the caſe is otherwiſe, when the chyle is viſcid. Then, indeed, the blood has much leſs denſity, than in the natural ſtate; becauſe the materials for making it compact and firm are wanting;

wanting; namely, a good chyle, and a ſound, ſtrong habit of body. But ſtill it is not ſo divided and looſe, as when its texture is broken. A proof of this is, that, in thoſe diſorders, which, as ſhall be ſeen hereafter, ariſe from viſcid chyle, the blood never quits its own channels: whereas in thoſe, that are owing to its diſſolution, it has been often ſeen to break forth through different outlets. Again, when a viſcidity prevails, the blood, if received in a tea-cup, ſeparates into *ſerum*, and *craſſamentum*; but when the texture of the blood-globules is broken, the whole remains in an uniform maſs, juſt as if it had been diſſolved by an addition of ſome fixed, or volatile alkali.

WHAT the fevers are, which theſe different changes, and their different combinations, produce, I ſhall examine in another place. Here, I think it

it ſufficient to remark, that when a phyſician is called upon, to viſit a perſon, labouring under a fever, his firſt care ſhould be, to know, which of theſe changes has been the efficient cauſe; or, if they be combined, to determine, which of them is predominant. As to the remote or occaſional cauſes, by which I mean thoſe that are capable of inducing theſe changes, they are, no doubt, though not immediately, worthy of a ſerious conſideration. For, if they were not known, we ſhould never be able to put a man upon his guard againſt a relapſe: moreover, the very things, which, when uſed to exceſs, become occaſional cauſes of a fever, are, when uſed with temperance, the principal ſupporters of health. For which reaſon, I ſhall endeavour to trace them in the following chapters.

A PHYSICAL

A

PHYSICAL INQUIRY

INTO THE

CAUSE and CURE

OF

FEVERS.

PART the First. CHAPTER I.

SECT. I.

AIR.

SINCE we cannot attain a thorough knowledge of those bodies, which we not only see, but submit to the scrutiny of all our senses; much less is it possible to take a comprehensive view of the Air, which no test can render visible. But the regularity SECT. I.

SECT. I. larity of its effects plainly ſhews, that it is a tranſparent, ſonorous ſubſtance, which we can neither ſmell, nor taſte, nor touch; that it encircles the globe of the earth; that its gravity encreaſes as it approaches to the center; that it is endowed with an amazing degree of elaſticity; and that, tho' highly compreſſible, its conſtituent parts can never be brought to ſo cloſe a contact, as to be deprived of their fluidity. This is all, I believe, we ſhould pretend to know with any certainty. For, as to the internal configuration of this element, and the cauſe of its compreſſibility, ſpring, and motion, were we to account for them by the means of a ſubtile elaſtic Æther, inſurmountable difficulties would ſtill remain, as we ſhould be ſtill equally ignorant of the nature of æther itſelf. Indeed, when we advance but one ſtep beyond the ſenſible qualities of things, we go out of our depth, and every

every ſtruggle we make after, ſerves only to remind us of the narrow boundaries of our underſtanding. So that, without inquiring why the air is qualified to operate as an elaſtic fluid, I ſhall only inquire, firſt, into its general influence; and, ſecondly, what the affections are, which its different variations raiſe in the human body, and in what manner it operates in raiſing them. SECT. I.

SECT. II.

AIR, *why requiſite for the ſupport of life.*

IT is requiſite, for the vital motion of our fluids, that their component parts ſhould be round and ſmooth, and weakly cohering together. It is on theſe properties that the nature of all fluidity depends: and though the action of the heart, and SECT. II.

of

SECT. II. of the arteries contributes much to maintain these properties; yet it is certain, that they are, in a great measure, owing to the strongly-repelling air, which is interwoven with the chyle, and, by this means, with the other humours of the body. An instance of this intermediate air may be seen, when the blood is put into an air-pump, and the air, that presses on it, rarified by extraction. The same effect is produced, when a cupping-glass is applied. So that, if it were possible to remove all external resistance, the internal air would expand itself with a force, equal to the weight, which it is well known to support. I mean the atmosphere, whose pressure upon a man of a moderate size, is tantamount, at least, to 30,000lb. We owe it to a just balance between these contending forces, that, far from being burst by the one, or crushed by the other, we receive much

much benefit from the activity of both.

SECT. III.

The same subject continued.

TO prevent a retrograde motion of the blood, there are valves, planted up and down in the veins. Therefore, when the capacity of these vessels is lessened by the weight of the incumbent air, the blood must pass forward to the heart; and the motion must be then quicker, because it is an established law, that whilst the propelling force continues the same, a fluid should move faster in a tube of a small, than in one of a large diameter. Thus it comes to pass, that two powers, as opposite as can possibly be imagined, cooperate with one another in keeping up a due circulation. This effect, though produced in every part SECT. III.

 of

SECT. III.

of the frame, is yet more manifest in the lungs. As the body wastes away, when these organs are embarrassed, or any way injured, and that it thrives apace, when they are well able to perform their functions, we have reason to infer, that they are the principal instruments, which are employed in converting the chyle into serum and blood, and in qualifying both for the purposes of animal oeconomy. The mechanism is, indeed, of a very complicated kind; but the main spring is the action of the air: for, by dilating the vesicles of the lungs, it unfolds the innumerable capillary arteries, which surround them; and when it is expired, these vessels, which may well be compared to a net-work, are again shrivelled so, as to form an obstacle, which nothing, but an inspiration of air, can remove. These acts are every moment attended with an alternate rising and falling of the lungs,

lungs, and, consequently, with a dilatation and contraction of their vessels; and by these means, all the humours are not only kept in motion, but pressed, and mixed, and moulded, in such a variety of ways, as to acquire the properties, necessary for their respective destinations. SECT. III.

SECT. IV.

Variations of the Air.

AFTER having shown, how we are benefitted by the gravity and elastic force of the Air, I think it needless to shew, in what manner we may be injured by its levity and rarefaction. As they are opposite extremes, the knowledge of the one leads naturally to that of the other. But, since the variations, that are made in these primary qualities, SECT. IV.

SECT. IV. receive additional force from Cold and Heat; from Moiſture and Dryneſs; it is worth while to conſider each of theſe aſſociations.

SECT. V.

Of cold, dry Air.

SECT. V. MUCH has been ſaid concerning the phyſical cauſe of Cold. Some look upon it, as a mere privation of Heat; whilſt others conſider it, as the property of certain frigorific particles. Indeed, as we have as ſure a ſenſation of cold, as of heat, and that the effects of both preſerve an uniform contraſt through the whole ſyſtem of nature, I think it very unphiloſophical, to admit a poſitive cauſe for the one, and a negative cauſe for the other. But be this as it may, no doubt can be entertained concerning the influence of cold. All people

people agree, that it tends to conſtringe what is already ſolid, and to condenſe that which is naturally fluid. Air, itſelf, is condenſed by it, though never to ſuch a degree, as to be deprived of its fluidity. So that, by the united force of the impreſſion of cold, and the increaſe, which it makes in the gravity of the air, our bodies muſt be braced conſiderably. No perſons are more ſenſible of ſo great a change, than thoſe, who are any way conſumptive. For which reaſon, ſuch of them as can travel, are ordered, very properly, to ſpend the winter in ſome country, where the air is mild and temperate; where it has not too great a ſpring to diſtract their lungs, nor too great a gravity to concentrate their humours. But what is hurtful to ſome, is very beneficial to others. A man of a ſound frame never enjoys a greater degree of activity, both in body and mind, than when the at- SECT. V.

SECT. V. mosphere is dry and cold. This constitution of the air, like a cold bath, increases the action of the solids, and momentum of the blood; and, by these means, enables the body to perform its functions with vigour. It must be well remembered, however, that here, as well as in all other cases, the advantage we reap, is closely allied to a very great danger. For if proper care be not taken, by the means of exercise, of warm, diluting drink, and a sufficient covering, to counteract the congealing quality of cold, it never fails to disturb the freedom of circulation; and this for two clear reasons. The first is, that by coagulating the serum and blood, it lessens their fluidity: And the second is, that by contracting the diameter of the vessels, it renders them less pervious.

SECT.

SECT. VI.

Of cold, moist Air.

THE evil, which I have afcribed to the foregoing conftitution of the air, may be, in like manner, produced by one that is cold and moift. The only difference is, that the veffels are now as much relaxed by the Moifture, as they are braced by the Cold. But ftill it is certain, that the ferum and blood have a natural tendency to a ftate of coagulation, and that a cold of any kind is well qualified to forward it. Nor is this all. The moifture of cold air, like the moifture of cold linen, induces another change, no lefs dangerous, than common. For by obftructing the difcharge of perfpiration, it locks up an excrementitious matter, which operates, as a ferment, and difpofes the hu- SECT. VI.

SECT. VI. mours to a ftate of putrefaction. So that when a cold, moift conftitution of the air prevails for a good while, we are juftly to apprehend a combination of the diforders, which arife from a coagulation of the blood on one fide, and from a tendency to its diffolution on the other.

SECT. VII.

Of warm, dry Air.

SECT. VII. TO correct the preceding injuries, there is no temperature of the air fo fit, as that, which is Dry and Warm. All nature rejoices at the approach of fummer, when the kindly relaxing heat of the fun diffipates the gloomy afpect of winter. But, to be ferviceable, the heat fhould not exceed, either in degree, or in duration: otherwife, it might be extremely hurtful. There is no animal but fhews evident

evident marks of uneaſineſs, upon being ſhut up for a time, where the heat of the place equals that of its body. The air is then too much rarefied, and conſequently too light, either to diſtend its lungs, or to counteract the force, with which the heat expands its humours. For which reaſon, we may obſerve, that after many, but fruitleſs efforts to breath, its body ſwells, and putrefies. Upon the ſame principle it is, that the inhabitants of the torrid Zone are very ſubject to peſtilential diſorders. And if theſe complaints are not ſo common among us, it is becauſe our climate is more temperate. As a proof of what I advance, we may remark, that, when the ſummer continues long dry, and ſcorching, the blood becomes extremely acrid, juſt as any animal oil, when expoſed for a time to the heat of the ſun, runs into a putrid, and corroſive liquor. Hence it is, that, towards

SECT. VII.

SECT. VII. towards the end of such a season, a variety of putrid disorders prevail epidemically.

SECT. VIII.

Of warm, moist Air.

SECT. VIII. DURING a very warm season, it is rather desirable that there should be now and then some showers. They temper the heat; and purge the air of putrid exhalations. Moreover, the Moisture, which is then taken in through the pores, gives a sort of check to an immoderate discharge of perspiration; and by mixing with the blood, it not only softens the solids, which the heat had rendered too dry, but compensates for the subtile fluids, which had been dissipated in too great an abundance. It happens unfortunately, however, that the things, which are justly deemed salutary, have a coun-

SECT. IX.

different infections be contained? It is true, that their specifick qualities are, in many respects, inscrutable. Who can explain, for instance, why some infections should make but one attack; whilst others are known to make many? And, indeed, it is no less inconceiveable, why any one of them should propagate itself, and no other; or why some may be conveyed to a certain distance through the air; whilst others require an immediate contact for their communication. But yet there appears enough, to give us an idea, not only of the general character of those infections, to which the air serves as a vehicle, but even of the manner, in which they operate. The plague stands first in the catalogue of infectious disorders; and they who have written best upon it, have traced its origin from eastern climates, where excessive heat and moisture, joined to the nature of the soil, and the man-

ners

SECT. IX. ners of the inhabitants, have promoted a general corruption. It has been observed at all times, that contagions have been most rife, where putrefaction has mostly prevailed, as in prisons, and crowded hospitals, in besieged towns, and fields of battle, where thousands have been left to rot unburied. Hence it follows, I think, clearly, first, that what is meant by any infection, communicated through the medium of the air, is, in reality, a putrid exhalation, or, in other words, a volatile alkaline substance, the necessary product of putrefaction. Secondly, that when this offensive matter is taken in by the breath, it tends, as all alkalis do, to agitate the animal spirits; to break the texture of the blood; and to raise a putrefactive ferment, more or less violent, as it is, in itself, more or less virulent; and the person it invades, more or less disposed to receive it.

SECT.

SECT. X.

Of fixed Air.

WHEN an acid, and an alkali are closely united together, so as to form a neutral salt, they mutually rob each other of their characteristick properties. The same thing happens, whenever the integral parts of a simple element are closely combined with those of another. Hence it is, that, when fire, water, air, and earth, constitute by their union a complex body, neither of them can then retain the properties, which specify them, singly. The air, in particular, loses the compressibility, and elastic force, which distinguish it in a state of aggregation. We call it then fixed air, and the expression is very proper. But why the same name should be given to the vapour, which arises from SECT X.

SECT. X. from the decomposition of any body, I confess, I know not. This vapour, far from being fixed, is volatile; and, far from being formed, only of air, is a compound of several substances. For the same force, which is sufficient to disunite the constituent parts of any body, is sufficient to dissipate, in the form of a vapour, such of them as are volatile; and not only these, but such molecules of the fixed earth, as still retain a connexion with them. Why then should a collection of several principles have a name, that is peculiar only to one of them? and why attribute to this one, what is common to them all? It is well known, that no vapours are, in every respect, similar; and that the properties, which they hold in common, are possessed by some, in a more eminent degree, than by others. So that, if fixed air, and vapour were synonymous terms, we should admit as many species of the

the former, as there are of bodies, that contain it. SECT. X.

SECT. XI.

Whether fixed Air be the bond of union.

IT is obſervable, that different ſubſtances become united, when all their parts are brought into mutual contact: and alſo, that they remain in this ſtate of union, until a force, ſuperior to that of their coheſion, be uſed, to ſeparate them. To account for this, the advocates of fixed air are at no loſs. According to them, the air, which enters into the compoſition of bodies, ſerves as a cement, to keep all their conſtituent parts linked together. But, ſurely, as all elementary particles have a reciprocal attraction, it muſt be an abuſe of words, to call any one of them, the cement, or bond of union. It is true, that lime, and the SECT. XI.

SECT. XI. calces of metals, recover their original nature, when they receive the vapour, which arises from the decomposition of another body. But what then? Indeed, if calcination had deprived metals and calcareous stones of nothing else, than their elementary air: and if the vapour, that reduces them, had contained nothing but air; then, perhaps, there would be some foundation to admit the cementing quality of this element. But neither of these suppositions is a fact. For the operation, necessary to convert metals, and calcareous earths into a calx, deprives them of other volatile principles, as well as of air; and the vapour, which reduces them, contains not only air, but the rest of what they had lost. A proof of this is, that, of all the vapours, used upon these occasions, there are none so fit, as those, which are inflammable, and which, of course, are replete with elementary fire, or phlogiston.

giston. To conclude, therefore, that air is the bond of union, because it accompanies the loss, which is made by calcination; and that it is an ingredient in the vapour, which repairs this loss, is nothing less than a sophism, which makes us take that for a cause, which is only a concomitant. This is much like the sophism of the fly, who imagined, he raised a great dust, because he stood upon the wheel, that really raised it. SECT. XI.

SECT. XII.

Of other supposed properties of fixed Air.

WHEN we distil sal ammoniac; and precipitate the calcareous earth, which had been dissolved in the nitrous acid, we remark, that, according to the intermedium we employ, a difference appears in the result SECT. XII.

SECT. XII. ſult of each proceſs. For inſtance, a concrete ſalt ariſes, when the diſtillation is carried on, through the means of a fixed alkali: whereas, if lime be uſed, no concrete ſalt can ariſe; nor can the cauſtic ſpirit, which mounts in its place, effervesce with any acid. From the ſecond operation, if you mean to obtain lime, you muſt precipitate with this cauſtic ſpirit; but if you wiſh to obtain a calcareous earth, you muſt precipitate with the concrete alkali. Thus far I agree with every partizan of fixed air; but in the way of explanation, I beg leave to differ. And, that I may not ſeem to do ſo, without reaſon, let me aſk, what conſtitutes the eſſence and concrete form of any alkaline ſubſtance? Surely, not air and earth alone. For, when an alkali effervesces with acids, it excites a degree of heat, which plainly denotes the preſence of elementary fire, or phlogiſton: And again,

gain, the more you dry an alkali, the more you render it incapable of any effervescence; which is a proof, that a certain portion of water is one of the elements that compose it. Now, as the fixed alkali, which we use in the first process, is sufficiently saturated with these elements, it is plain, that it can attract nothing else, than the acid of the sal ammoniac: so that the volatile alkali, which is then set loose, must retain the whole of its own parts; which is the reason that it ascends in a concrete form, and effervesces with acids. But lime, which is far from being replete with the same elements, greedily attracts a portion of them all, as well as the acid of the sal ammoniac: so that, when disengaged, the volatile alkali must be, in a great measure, stripped of its integral parts; for which reason, it can neither effervesce with acids, nor be obtained in any other

SECT. XII.

SECT. XII. form, than that of a caustic spirit. However, it has still a power to dispossess calcareous earth, and to unite with the nitrous acid. But, as it has neither water, nor air, nor phlogiston to lose; so the calcareous earth, which had been, at the time of its dissolution, deprived of these principles, is forced to subside in the form of pure lime: whereas, when we precipitate with a concrete alkali, whether fixed, or volatile, a double union takes place. That is, the nitrous acid quits its basis, to unite with the concrete alkali; and this, in its turn, quits a portion of its water, its air, and its phlogiston; all which unite with the former basis of the acid, and precipitate it, in the form of a true calcareous earth. I know very well, that these differences have been explained on the principle of fixed air alone, and that they have been looked upon, as decisive proofs of its singular properties. But, since it

it is not, ſingly, by the loſs of air, that either calcareous earth can be converted into lime, or a concrete alkali into a cauſtic ſpirit, how is it poſſible, that the regaining of this ſingle element could reduce theſe ſubſtances to their original nature? I appeal to every unbiaſſed judge. SECT. XII.

SECT. XIII.

Whether or no fixed Air be an Antiſeptic.

AS bodies in the mineral kingdom recover their primitive form, when they receive the volatile principles, which they had loſt during their decompoſition, it has occurred to ſome, that, in ſimilar circumſtances, the ſame change would be wrought in the animal and vegetable ſubſtances, which are decompoſed by putrefaction. To try, if there really be SECT. XIII.

SECT. XIII. an analogy of this sort, a train of experiments has been made; and, upon a partial view, it may seem, that the event has not been unfavourable. But, let it be admitted, that the analogy is perfect, what can we draw from thence in favour of fixed air? We have seen already, that this element is not at all, or but very little, concerned in the reduction of metals, and of calcareous earth: and, surely, it must be as little so, in the sweetening of animal and vegetable substances. For, though this change may be produced by some vapours, yet others have the power of producing quite a contrary effect, as every one will be convinced, who leaves a piece of fresh meat exposed to the corrupted steam, which comes from any body in an actual state of putrefaction. To what, then, shall we ascribe these opposite effects? Is it to the elementary air, which all vapours hold in common?

or

or to the other principles, in which they differ? There is no room to hesitate; and he will be confirmed in his opinion, who considers, that the substances, which afford an antiseptic vapour, are antiseptic themselves in a superlative degree. Such are mineral acids, and the products of fermentation, tartar, vinegar, and spirits of wine. It may be said, perhaps, that antiseptic vapours do not inebriate, nor alter the colour of vegetable juices; and, therefore, that they contain no portion of either spirit or acid. If any one makes this objection, I shall refer him, for an answer, first, to what passes, when a man incautiously exposes himself in a cellar to the vapour of a vinous fermentation; and, secondly, to the tartish astringent taste, which is imparted to water, by the vapour of an effervescing mixture. As for other substances, which are acknowledged to be powerful antiseptics, and which, nevertheless,

SECT. XIII.

SECT. XIII. theless, are neither acid, nor spirituous, I shall shew hereafter, upon what principle they operate. At present, I shall only observe, that if the bark were antiseptic, merely because it contains fixed air, then every body in nature, that contains an equal portion of this element, and is no less disposed to yield it, would be antiseptic in an equal degree. This seems to me to be a fair conclusion. And yet, if it were to regulate our practice, I fear we should have no reason to plume ourselves upon the discovery of fixed air: as the salt beef, which causes a putrid scurvy, would be then given, as an excellent remedy to cure it.

CHAP.

CHAPTER II.

SECT. I.

Food.

NEXT to air, the thing we stand most in need of, is Food. SECT. I. For the motion, which is necessary to the support of life, dissipates a part, not only of our fluids; but even of our solids, and, if an adequate reparation were not made, it is an unavoidable consequence, that the whole frame should soon decay. But, as the most nutritive aliment is of no avail, and may be rather hurtful, unless it be rightly prepared in the stomach and intestines, it behoves us much to know, in what this preparation consists.

SECT. II.

Digeſtion

SECT. II.

I KNOW of no phyſiological point, upon which people differ ſo widely, as on the ſubject of digeſtion. Having obſerved, how readily an alimentary mixture ferments in a warm place, men of great parts have transferred their ideas to what paſſes in the ſtomach; and revived the doctrine of alimentary fermentation. The partizans of fixed air have gone ſtill further. As their favourite element, *the grand corrector of putrefaction*, could not be ſet looſe, without an inteſtine motion, it was neceſſary for them to inſiſt, that both food and medicines fermented in the ſtomach; and that there is no other way of obtaining a good chyle. But, in framing this opinion, I am appre henſive,

henſive, that experience has not been ſufficiently conſulted. For, upon that principle, we ſhould digeſt well, when the ſtomach is ſick, when the liver, the pancreas, and ſalival glands are greatly obſtructed: and yet our own feelings prove the contrary. Nor have we then ſo much as a craving for food, which would be very ſingular, indeed, if nothing more, than heat and moiſture, were ſufficient to digeſt it. SECT. II.

SECT. III.

True cauſe of Digeſtion.

MOREOVER, if fermentation had any ſhare in the progreſs of digeſtion, the nature of the produce would neceſſarily partake of it. The chyle ſhould then be vinous, or acetous, or putrid. But, on trial, it is found quite otherwiſe; and to differ in nothing from a ſmooth, SECT. III.

oily,

SECT. III. oily, mucilaginous substance. Which shews, that it is composed, partly, of the nutritive juices, which pre-existed in the aliment, and, partly, of the menstruum, which is employed to extract them. Before a resin can be chymically obtained, the body, that contains it, must be sliced and pounded; it must then be mixed with a proper dissolvent, placed in a convenient vessel; exposed to a certain degree of heat; and shaken from time to time. I could not wish for a better example, to point out the true cause of digestion. And the analogy will appear exact, when we come to consider, that chewing is tantamount to pounding; that the saliva, the bile, the gastrick, and pancreatick juices, are real dissolvents; that where the aliment is contained, is a proper vessel; that the human body supplies the requisite heat; and that the action of the stomach, and of the abdominal muscles, the rising

SECT. III.

ſing and falling of the diaphragm, the pulſation of the large neighbouring blood veſſels, together with a gentle exercife, are ſufficient to produce the neceſſary degree of agitation. By the periſtaltick motion of the guts, the fibrous, or feculent part of the food, is made to ſlide towards the rectum, where it acquires acrimony enough to ſolicit a diſcharge. But the extract is taken up, by a number of little abſorbent veſſels, planted thick along the inteſtinal tube; and, after being incorporated with the lymph, which it meets at different ſtages of its progreſs, it is poured at laſt into the maſs of all our humours. Here, as the chyle is yet too crude to anſwer all the purpoſes of its deſtination, a ſecond digeſtion becomes neceſſary. In this too, ſome uſeleſs parts muſt be expelled; and the reſt fitted, ſome to form blood, others to form lymph: ſome to renew animal ſpirits, and others, again, to

repair

SECT. III. repair the losses of our solids. And shall fermentation model the chyle into a variety of forms, agreeable to this great variety of ends? Whilst nature is able to do her own business, our sensations are rather pleasing. At least, we feel no tumult, no uneasiness. And will you produce such harmony, by throwing the humours into a fermentatory motion?

SECT. IV.

Fermentation, the concomitant of Indigestion.

SECT. IV. I DO not, however, mean totally to exclude Fermentation. On the contrary, I doubt not, that it takes place, whenever the digestive powers are unable to discharge any part of their respective offices. What confirms me in this opinion, is, that the

SECT. IV.

the appearances, which attend a complete indigeſtion, correſpond exactly with thoſe, which we diſcover, when an alimentary mixture is incloſed, with a ſufficient quantity of water, in a common bladder, ſlightly ſtopped, and expoſed to a moderate degree of heat. In both caſes, we perceive the ſame inteſtine motion; the ſame expanſion of the aliment; the ſame buoying up of its groſſer parts; and, what is ſtill more deciſive, the very liquor, which reſults from an alimentary fermentation, carried on before our eyes, is formed in the ſtomach, by the means of indigeſtion. Of this we need no other proof, than the diſagreeable eructations, which are but too frequent at that time. It cannot, therefore, be any thing leſs, than a palpable miſtake, to aſcribe the cauſe of a good digeſtion to a fermentatory proceſs, which never exiſts, but when there is an indigeſtion.

SECT. V.

Digestion and fermentation compared.

SECT. V.

BEFORE I conclude this subject, it may not be improper to compare the principal effects of Digestion, with those, which are produced by Fermentation; as we may discover, by making a contrast, what might otherwise pass by unnoticed. Whilst a good Digestion is going on, all the organs of the body are relieved from the languid state, they had been in before: but during the time of fermentation, a damp is thrown upon a man's spirits; at every moment he feels an uneasy load; and is scarce able to move under it. Digestion does not create any considerable distension of the stomach; nor is it attended with flatulency, or eructations: Whereas fermentation distends the stomach very

very much; and generates air; which rifes to the mouth, fometimes alone; and fometimes forcing a part of the aliment to afcend along with it. Digeftion prepares the food for a paffage into the inteftines; and for yielding a good chyle: Fermentation, on the other hand, caufes the moft part of the food to be thrown up; and, as a fubftitute for chyle, it produces a ftore of four and putrid ferments, which vellicate the ftomach, and inteftines; and, if not timely corrected, induce an acrimony in all the humours. They are, indeed, operations of a very different nature, the one being founded on a due exertion of the mechanical powers of our frame: and the other taking place, when thefe powers are exhaufted. This I take to be a diftinction, which fhould never be forgotten by thofe, whofe profeffion requires, that they fhould keep the firft in proper order; and always guard againft the baneful

SECT. V.

SECT. V.

baneful influence of the second. If ever Digestion and Fermentation are found united, and in the following section, I mean to allow, that they sometimes are, does this prove, that they are not contradictory? The human body is often, and, perhaps, it is, for the most part, in a state of neither rude health, nor absolute sickness, which we may justly call a state of mediocrity. In this mixed condition, if the natural functions be performed without any considerable impediment, shall we therefore say, that health and sickness are exactly the same; and that a mutual dependence of one on the other is necessary for the discharge of these functions?

SECT.

SECT. VI.

Digestion and Fermentation further considered.

SECT. VI.

WE have already seen, that, for the perfection of chyle, a due exercise of our digestive powers is requisite: and, on the other hand, that our food runs into a fermentative motion, when these powers are, by any means, rendered unoperative. But every day's experience shews us, that there is a number of intermediate degrees, which approach more or less, to either of these extremes; and from what has been already remarked, it will, I hope, appear no less certain, that, as they recede from the one, and draw near to the other, digestion is, in that proportion, impaired; and the aliment subject to ferment. It might

SECT. VI. be no leſs curious, than inſtructive, to deſcribe each of theſe degrees; but a detail could not be given, without repeating illuſtrations of the ſame nature; and repetitions are always ſure to diſguſt. Beſides, as in the various combinations of black and white, the eye can diſcover, which colour is predominant, ſo a true idea of digeſtion, and of its oppoſite, fermentation, will point out to a ſkilful obſerver, which of them prevails, when they are both united. I cannot, however, but mention, what, I am ſure, deſerves particular notice; that, when theſe two operations are blended together, the chyle, which is then formed, is neither ſour, nor putrid, becauſe it is not, altogether, the produce of fermentation; nor fit enough to nouriſh the body, becauſe it is not, entirely, produced by digeſtion. I call it a viſcid, ropy chyle, and I ſhall ſhew hereafter, that it is of a very morbid nature.

SECT.

SECT. VII.

Conclusion.

As it ſhould be a man's intention, to oppoſe every degree of fermentation, and, by that means, to ſtrengthen digeſtion; he ought to avoid ſuch aliments, as are the fitteſt to relax the ſtomach; and to run into a fermentative motion. In this claſs, we may rank all fat and oily ſubſtances. Theſe ſmooth bodies, when applied outwardly, relax even the ſkin; and are, therefore, uſed to ſoften hard ſwellings, and to allay pain, which ariſes from a tenſion, or pulling of the fibres. Fiſh and green vegetables, though not quite ſo relaxing, are very apt to ferment, and are, for this reaſon, when taken freely, always offenſive to weak ſtomachs. As for the aliments, which are naturally tough, SECT. VII.

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SECT. VII. we cannot expect them to be readily subdued; and the juices of salt meats, like those of highly seasoned dishes, convey an acrimony to the blood; and produce much the same effect, as if they had been really putrid. I know, indeed, that people of a strong constitution, particularly those, who are obliged to go through hard labour, can digest any thing, in a due quantity; and therefore it is that their appetite is too keen, to suffer their taste to be delicate. But the sedentary, and studious; the tender, and valetudinary; all such persons should be particularly nice in the food they take: and I know of no sort better, than what is neither soft enough to weaken, nor hard enough to elude the force of the stomach. Such are fresh tender meats, and stale, well baked bread. The union of these substances is by so much the more eligible, as the acescent quality of the one, counteracts the alkalescent

lescent disposition of the other. So that the chyle, which is then formed, can have nothing crude, or viscid, or pungent; and may, therefore, be easily assimilated to the rest of our humours. As to the exact quantity, that should be taken, of these aliments, I do not think, that we stand in need of scale and weights to ascertain it. Every one carries about him a faithful monitor, a natural instinct; and he who will not measure his meals by this standard, must eat less, or exercise more; or take physick, or be sick. SECT. VII.

SECT. VIII.

Of Drink.

THOUGH we receive little or no nourishment from drink, merely, as such; yet there is no room to doubt, that it contributes much to the support of health. For, without it, SECT. VIII.

SECT. VIII.

it, no ſolid food could be rightly diſpoſed to yield its nutritive juices; nor could the chyle have fluidity, and motion enough to pervade the capillary veſſels of the frame. Beſides, nothing but drink can ſerve, as a vehicle, for the diſcharge of any ſubſtance, that might, if long retained, become noxious. And hence it is, that when nature ſtands much in need of it, we are tormented with thirſt, a ſenſation no leſs irreſiſtable, than that, which points out the neceſſity of food. But, ſalutary as a moderate quantity may be, an exceſs is always hurtful; and the injury varies, according to the nature of the drink; and the degree and frequency of the exceſſes. Thus, water alone, when drunk too much, relaxes the ſtomach, and weakens the digeſtive fluids. And, indeed, though the chyle ſhould have no other fault, than that of being too much diluted, this alone would be ſufficient to ren-

SECT. VIII.

der it unfit for nutrition, as it muft then pafs, in too great an abundance, through the different excretory outlets; or elfe, if kept in the body, occafion at length a leucophlegmatick habit. Thefe evils, however, and the fecondary ones, which flow from them, are but flight, when compared with fuch, as are produced by an excefs of fpirituous liquors. For it is the nature of every intoxicating drink, to crifp up the fibres, and to coagulate the ferum and blood, at the fame time, that it renders the circulation extremely rapid: than which nothing can be more capable of caufing a variety of dangerous obftructions. Nor is this the only mifchief. By deftroying the tone of the ftomach, and otherwife impairing digeftion, an immoderate ufe of fpirits gives rife to the formation of acrid chyle; and to this, as well as to the effect of a previous accumulation of bad humours, we may

afcribe

SECT. VIII. ascribe the acrimony, which prevails in all great drinkers; and which in its turn, never fails to produce a train of disorders. Not to particularize any, we may justly conclude, that there is scarce a complaint, which may not be owing to an abuse of this sort; and, therefore, it were greatly to be wished, that we had, in common, the same measure to guard against it. But it is impossible to draw such an exact line. For the force of habit and constitution varies so much in various people, that what is temperance in one man, is excess in another. So that, to know the precise quantity of drink, which nature requires, every individual ought to attend to his feelings; and, in his own forum, to judge without appeal.

CHAPTER III.

On Exercise and Inaction.

SECT. I.

Exercise.

THE necessity of bodily exercise, and the benefit, arising from a well regulated use of it, are sufficiently obvious. For, unless they were rouzed, and worked to a proper degree, the coarse muscular fibres of our frame could not have a tone, vigorous enough to propel the humours in their respective channels; nor to give them the fluidity, and configuration of parts, which are necessary for their respective functions. But still no mode of exercise should be continued too long; nor carried to violence at any one time. SECT. I.

SECT. I. time. Otherwise, the consequence may prove fatal: Since, by an over exertion of the contracting powers of the muscles, some slender vessels may burst; or the blood may be forced into the lymphatics; or the fibres, themselves, may lose the power of their oscillatory motion; a thing very common, when they are stretched beyond their natural tone. But the evil, which follows most frequently from an excess of labour, is a coagulation of the lymph; and this, because the thinnest fluids are dissipated; and that to allay their heat, people imprudently expose themselves to a sudden impression of cold. Moreover, if the perspirable matter be suddenly stopped, which is then usually the case, it is almost as fit to dissolve the humours, as the sudden introduction of cold is, to coagulate them.

SECT.

SECT. II.

Inaction.

EVERY one knows, how neceſſary it is to enjoy reſt at certain intervals. But, as it is flattering to indolence, we may be tempted to enjoy it too long; and then it cannot but be productive of many inconveniencies. In the foregoing Section it was obſerved, that too great an action of the fibres diſſipates the thinneſt fluids; and that the groſs particles, which remain, are preſſed together, ſo as to be moulded into a very denſe blood. Here, becauſe the action is too weak, the effect muſt be quite the contrary. Thoſe, in reality, who remain long in an inactive ſtate, have a great quantity of ſerum; but very little blood; and this too of a very looſe texture. We ſay commonly, that ſuch perſons are SECT. II.

SECT. II. are of a cold phlegmatick conſtitution, and the expreſſion is very proper. For, that which creates heat in the human frame, is wanting in them; a certain momentum of the blood; and an adequate reaction of the veſſels upon it. By a colliſion of this ſort, even the coldeſt bodies grow warm; and, when it fails, to a certain degree, in a living body, the event is always uniform. That is, the circulation becomes languid, and the humours follow their natural tendency, corrupting in ſome places, and running into morbid concretions in others.

CHAP.

CHAPTER IV.

On Sleep and Watchfulneſs.

SECT. I.

Sleep.

WHILST we are awake, the objects, that play upon the organs of our ſenſes, keep the fibres in a certain degree of tenſion. The operations of the mind do the ſame; and whether we exerciſe or not, there muſt be ſome muſcular contraction; as, without it, the body could neither move, nor remain quiet in any one poſture. Now, that a waſte ſhould be committed by theſe means, is very obvious; but it is not ſo clear, that a reparation can be then made. On the SECT. I.

 contrary,

SECT. I. contrary, we may eaſily conceive, that the very action, which forces off a particle, already fixed, muſt prevent the application of a new one. And hence it is, that to nouriſh the different parts of the body, it is neceſſary, that they ſhould be relaxed ſo, as to make no reſiſtance; and that the force, which conveys, and applies nouriſhment to them, ſhould be, at the ſame time, rather increaſed. Now a mechaniſm of this ſort never takes place, but while we are aſleep; nor can a ſtore of animal ſpirits be laid up at any other time.

SECT. II.

Why too much Sleep is hurtful.

SECT. II. AFTER a ſleep of ſeven or eight hours, the ſenſory is repleniſhed with the nervous fluid, which had been ſecreted in the cortical part of the

SECT. II.

the brain, and refined and perfected in the medullary ſubſtance. We awake then, becauſe this ſecretion, like all the reſt, ſtimulates the organs, which are appropriated to its diſcharge; and wants only the concurrence of our will, to force its way into its excretory ducts, the nerves. But if, inſtead of expediting, we ſtrive to retard its motion, and ſtill to ſleep on, or rather to ſoak in bed, our feelings alone may appriſe us of the conſequence. Far from being refreſhed, or in a proper condition, to reſume, with vigour, our uſual occupations, we find ourſelves heavy, and languid. There is, indeed, a good reaſon for it. A reſtraint upon any ſecretion weakens the tone, not only of the parts, which contain it, but even of thoſe, which are concerned in preparing it; nor is the injury ever ſo great, as where the organs are, naturally, moſt tender. Beſides, the heat of a bed, like that of a warm bath,

SECT. II. relaxes the body very much: So that, by indulging the habit of staying too long in it, a man exposes himself to the evils, which have been said to follow from inaction.

SECT. III.

Of Watchfulness.

SECT. III. AS the preservation of health depends, in a great measure, upon a periodical succession of Sleep and Watchfulness, it happens fortunately, that a due time is appointed for the enjoyment of both. After being, from fourteen to sixteen hours, awake, we feel a natural propensity to sleep; and, as soon as we lay up a store of animal spirits, sufficient to invigorate our frame, that is, after having slept about eight hours, we awake again. But this order, though established by nature, is liable to be disturbed

turbed by a variety of accidents. When the ſenſes are, for a length of time, affected ſtrongly in any one manner, they cannot readily be made to change their tenour, nor, of courſe, to fall into the ſtate of relaxation, which is the mechanical cauſe of Sleep. This is the reaſon, why people ſpend many a reſtleſs hour, who are under the influence of either bodily pain, or ſome ſtrong emotion of mind. Now, though it be poſſible, that, from a caſual encroachment on the time of ſleep, no apparent inconvenience may ariſe, yet it does not at all follow, that tranſgreſſions of this ſort may be committed often with impunity. On the contrary, as an exceſs of Watchfulneſs diſſipates the nervous fluid, and prevents the formation of a freſh ſupply, it muſt neceſſarily reduce the ſolids into a languid ſtate. For which reaſon, and partly becauſe the humours are, at the ſame time, deprived of

SECT. III.

SECT. III. their thinnest particles, the circulation cannot but be embarrassed considerably. A proof of this may be drawn from the swelling, which appears frequently in those, who spend whole days and nights in some constant occupation. And, indeed, as every animal function must be then disturbed, it can be no wonder, that the humours should become so acrid, as to run, at last, into a state of dissolution.

CHAP.

CHAPTER V.

SECT. I.

Of our Evacuations, and their Obstructions.

THOUGH it be true, that for some time after meals, an healthy man carries about him an additional weight, it is yet no leſs ſo, that the work of digeſtion is no ſooner finiſhed, than he recovers his former ſtandard. Which ſhows plainly, that his evacuations bear a juſt proportion to the quantity he had taken of meat and drink; and, indeed, it is happy, that there is ſuch an even balance between them. For, if we were, every day, to gain more, than we loſe, or to loſe more, than we gain, it is evident, that, in the firſt caſe, we ſhould grow SECT. I.

SECT. I. to an enormous size; and that, in the second, we should be reduced so, as, in a short time, to sink into a state of inanition.

SECT. II.

Expulsion of the Feces.

SECT. II. WE can readily conceive, that this equipoize could not be maintained, if our food were to pass off suddenly, or if, after being drained of its nutritive juices, it were to remain too long within the confines of the intestines. Indeed, as long as the digestion is good, these inconveniencies are not at all to be apprehended. But we never fail to discover them, when a fermentative motion takes place in the stomach, or intestines; or when the digestive powers, though strong enough to prevent a fermentation, are yet weak enough to suffer

suffer the alimentary mixture to stay too long a time before the mouths of the lacteals. For the ferments, which are created in the first instance, operate on the principle of purgative medicines: whereas the viscid juice, which is formed in the second, is usually attended with a contrary effect. As I have dwelt upon this subject in a preceding chapter, I shall now only remark, first, that it is a wrong practice, to stop suddenly the discharge of these acrid ferments, since they must then not only irritate the bowels still more, but pass, in a much greater abundance, to the blood; and, secondly, that it is no less improper to have recourse to purgative medicines, when the intestinal tube is lined with viscid, slimy juices. For nothing favours the generation of such substances more, than a slow, weak digestion; and certainly, it is not by purging, that we can ever expect to strengthen. SECT. II.

SECT. III.

Of Urine.

SECT. III.

NOR is the expulsion of the gross Feces alone sufficient. It is still necessary, that the blood should be freed from a variety of incumbrances. Not to mention here the impurities, which are caused by sickness, or excess of any sort, we all know, that there are several others, which are the unavoidable consequences of even the best state of health. For the very motion, which is the spring of life, wears off an infinite number of particles, which, if long retained, become noxious; and the heat of the human body exalts animal salts and oils, and renders them, unless speedily removed, extremely pungent. Besides, as it is the finest part of the

SECT. III.

the chyle, that can be modified ſo, as to anſwer the purpoſes of animal oeconomy, it follows, that all the reſt muſt be ſeparated, as a feculent matter. And if this be really the caſe, even when the digeſtion is good, what muſt we expect, when the food is ill choſen; or when, inſtead of being at all digeſted, it runs into a fermentative motion? The diſcharge of Urine is, indeed, one of the means, which nature employs, to carry off theſe excrementitious ſubſtances. But it happens frequently, that they cannot be ſufficiently ſecreted in the kidneys; and whatever the cauſe of ſuch a defect may be, this at leaſt is certain, that unleſs this urinous matter be timely expelled through ſome other outlet, it will acquire ſuch a degree of acrimony, as to corrode the veſſels, and break the texture of the blood.

SECT. IV.

Of Perspiration.

SECT. IV.

IF, on a clear summer's day, a man stands with his face, close to a white-washed wall, and exposes his head shaved, and uncovered, to the heat of the sun, he may observe the shadow of an ascending vapour. The steam of boiling water is not unlike what we breathe immediately after we come from a warm room into the cold air. A sort of moisture appears on the surface of a polished glass, when we breathe against it, or rub it with a warm hand. To these appearances, and to many others of the same kind, if we add the discoveries, that have been made by the contrivance of a statical chair, no doubt can remain, concerning the reality of perspiration. In general, this discharge is insensible; and

and to keep it ſo, certain conditions are requiſite. Otherwiſe, it becomes ſenſible enough; and then it is diſtinguiſhed by the name of ſweat. But, though theſe evacuations be different in appearance, we muſt not think, as ſome do, that they are ſo in reality. For the miliary glands, which are the only organs, that ſecrete them, are all of the ſame texture; and, moreover, the very means, which are, by general conſent, deemed fit to promote perſpiration, are alſo fit, when carried to violence, to bring on a ſweat. Since, then, the one is only an increaſe of the other, and that the conſtituent particles of ſweat, as we learn from a variety of experiments, are ſimilar to thoſe of urine, it follows, that perſpiration is compoſed of the ſame parts, namely, water, ſalt, oil and earth. The only difference is, that ſuch of theſe ingredients, as go off through the urinary paſſages, appear in the form of a fluid

SECT. IV. a fluid, groſs enough to be perceived by the naked eye; whereas, to be fitted for the pores of the ſkin, they muſt be ſubtilized by the action of the body ſo, as to paſs off, by an imperceptible exhalation.

SECT. V.

Why a ſudden ſuppreſſion of perſpiration is hurtful.

SECT. V. THOUGH it muſt be allowed, that an uninterrupted diſcharge of the perſpirable matter contributes very much to the preſervation of health, yet I do not judge it to follow, that the more a man perſpires, the more healthy he ſhould be. On the contrary, we obſerve in winter, when the exhalations, both from the ſkin and lungs, are a great deal leſs, that people in general are more vigorous and active. The body is diſpoſed by ſlow, and inſenſible

insensible degrees, to turn the defect another way; and to compensate for it, by the increase of other evacuations. So that we may lay it down as a rule, that when there is only a decrease of perspiration, and this too, a gradual one, no shock at all can be given. But the case is very different, when a considerable quantity is suppressed all at once. For then the organs may be embarrassed so, as to be no longer able to display either their oscillatory, or absorbent powers; and, in such a circumstance, it is plain, that the suppressed matter cannot be conveyed to other outlets. Now, as it is composed of very corruptible ingredients, we need not be at a loss to know, what effects should be produced by its retention. Considered merely according to its own nature, it cannot but raise a putrefactive ferment in the humours; nor is it possible for it to operate upon any other prin- SECT. V.

ciple.

SECT. V. ciple. But we must not forget, that extreme cold, which is the usual cause of the suppression, may coagulate the serum and blood, at the same time, that the retained matter of perspiration dissolves them.

CHAP.

CHAPTER VI.

SECT. I.

On the Paſſions.

THE medullary ſubſtance, or that part of the brain, from which the nerves take their origin, is called the common ſenſory, and it is ſo called, becauſe it is found to be the region of all our ſenſations. For if, by any means, the nerves be hindered from conveying thither the impreſſions, which they receive from external objects, no ſenſation can be raiſed, how ſtrongly ſoever its cauſe ſhould be in action. Thus, though a leg, or an arm, be expoſed to an intenſe degree of cold, or heat, a ſtrong ligature ſhall prevent the ſenſation of either. Juſt as a defect, that is born with a man in his optick nerves, ſhall hinder him SECT. I.

 from

SECT. I. from having any idea of colours. It can be no exception to this, that some men, though born blind, have been able to reason well about visual objects. For, what they knew, they learned from the relation of their other senses. They have heard, and retained the discoveries, that have been made by other people; but it will not, I believe, be contended for, that they have been ever able to make any of their own. So that, for the formation of ideas, it is requisite, not only that the nerves should be entire, and void of all embarrassment; but that they should also have a free communication with their original. Nor is this all. The brain itself must be disposed in a certain manner to receive what the nerves transmit to it. Otherwise, no impression can be made. As an opiate, or spirituous liquor shall abate the violence even of torture; and this, by inducing an extraordinary

disposition

SECT. I.

diſpoſition in the ſenſory. Now, as this organ, though compoſed of the ſame parts in all individuals, is yet no leſs diverſified, than their countenance, it can be no wonder, that the effects produced ſhould be in like manner different. Hence ariſes that prodigious variety, which is diſcovered in the affections of mankind: at leaſt it is impoſſible to account for it in any other way. But notwithſtanding this difference, it is certain, that in their leading paſſions, as well as in their outward form, all men have ſomething in common. Love, grief, fear, joy, pleaſure, diſlike, theſe and a numerous train of other paſſions have all, in their turn, affected every mind; and we owe it to the bounty of providence, that they ſhould: as without them, we ſhould all fall ſhort of the attainable perfections of our nature. Happy is the man, who knows how to govern their motions, ſo as to hinder

SECT. I. them from ever acting the tyrant, or being unrestrained by the curb of reason!

SECT. II.

How the body is affected by various Passions.

SECT. II. AS we cannot find out the mode, in which both body and mind are united, we must, I believe, despair of ever being able to explain, why an impression, made upon any of our senses, should excite a distinct passion in the mind; or why any distinct passion of the mind should, in its turn, produce certain determinate emotions in the body. But how impenetrable soever the cause may be, the affections themselves are sufficiently obvious. If the organs be sound, and in a proper condition to perform their functions, an outward impulse never fails to

to excite a certain paſſion in the mind, that of anger, for inſtance: and when once this is raiſed, it as ſurely affects the whole body, not by agitating the humours only, but by expanding the ſolids, and raiſing their tone to a conſiderable degree. Theſe effects are apparent enough from the faſhion of an angry man's countenance, and the geſture of his body: and they correſpond ſo exactly with his ſtate of mind, that even a ſtranger to the cauſe of his anger, would judge him to be under the influence of that particular paſſion, and no other. But, in the midſt of all this hurry, if the ſenſes receive another impulſe, capable of filling the mind with ſudden terror, then we perceive, that the change in the appearance of the body is no leſs ſudden. For the blood, inſtead of being tumultuouſly rarified, and forced into the lymphatics, as before, is now driven towards the center, and, in ſome

SECT. II.

SECT. II. meaſure, chilled. Hence paleneſs, coldneſs, and a ſenſe of ſuffocation. Which is a clear proof, that terror induces in the body a diſpoſition, contrary to that, which is cauſed by anger. And, that other paſſions counteract each other in the ſame manner, can as little be doubted; becauſe, in fact, the ſenſory can receive no impreſſion but from the laſt. Juſt as, when you move a pendulum in one way, it will continue to vibrate in an arch of the ſame circle: whereas, if you puſh it into a contrary direction, it will obey the laſt impulſe only. But, to give any paſſion its full force, it is neceſſary, that the ſenſibility (by which I mean a readineſs in the elementary fibres to be put into a vibratory motion) ſhould be great; and the outward impulſe ſtrong. Where theſe occaſional cauſes cooperate fully, the paſſion, which they raiſe, whether pleaſurable, or painful, may prove ſuddenly

denly mortal, as we learn from a variety of inſtances. And, indeed, tho' the immediate effect ſhould never be ſo great, yet if the paſſion be indulged too long, it may be no leſs fatal in its conſequences. For, by keeping the ſenſory in a conſtant tenour, it may force it at laſt, to contract the habit of repeating the ſame motion, in ſpite of the will; and thus, give riſe to ſome ſpecies of folly, or madneſs. At leaſt every day's experience ſhows us, that as too great an exerciſe of the body impairs the mental faculties, ſo any thing, that engroſſes the mind too much, is very fit to weaken the bodily organs, and thereby to occaſion many a morbid change in the humours. SECT. II.

SECT. III.

Recapitulation.

SECT. III.

ON a review of all that has been said, it will appear, that a concurrence of many things is necessary for the enjoyment of health. It will appear, too, that an excess of any one of them is sufficient to produce a real disorder; and, consequently, that the effect must be greater, and more sudden, when many excesses are joined. I do not pretend to have treated the subject, as extensively as its nature would admit. My only design was to draw the outlines. And if, upon examining them, a judicious reader adds the reflections, which must naturally occur to himself, he will easily perceive, how the serum, or lymph, can be coagulated; how the texture of the blood can be broken; how the chyle

chyle can be rendered viſcid; and how these different changes can be aſſociated. What ſtill remains to be ſhown is, that theſe very changes, and ſome of their combinations, are, each of them, the efficient cauſe of a diſtinct fever. Let us conſider them ſeparately. SECT. III.

The End of the firſt Part.

A PHYSICAL INQUIRY INTO THE CAUSE and CURE OF FEVERS.

PART II.

A PHYSICAL INQUIRY INTO THE CAUSE and CURE OF FEVERS.

PART II. CHAPTER I.

SECT. I.

Inflammatory Fever.

SECT. I.

THE complaints of thoſe, who are ſeized with an inflammatory fever, are not always the ſame. One man feels a general laſſitude, and little elſe; whilſt another complains chiefly of an head-ach; or of an uneaſineſs in ſome particular part. In ſome,

SECT. I. ſome, a ſhivering appears at firſt; and is ſoon followed by heat. In others, there is a feveriſh heat; but no perceivable ſhivering. But, notwithſtanding this uncertainty, there is one thing, on which we may depend. I mean that whitiſh, buff-like ſubſtance, which I have hitherto conſidered, as a coagulated ſerum, or lymph. This is ſo true a characteriſtick, that when it appears on the ſurface of the blood, it is alone ſufficient to regulate our judgment concerning the nature of the fever: we reſt ſatisfied, that it is merely inflammatory.

SECT. II.

Of the efficient cauſe of an inflammatory Fever.

SECT. II. AS the ſerum, or lymph, loſes of its natural fluidity, in proportion as it is rendered ſizy, it is a neceſſary

SECT. II.

ceſſary conſequence, that, in the ſame proportion, it ſhould ſtagnate in the capillary veſſels; or paſs through them with difficulty. In either caſe, we cannot but admit, that an obſtruction is formed to the progreſſive motion of the blood, and that, if the obſtruction be conſiderable, the heart, which is the principal inſtrument to remove all obſtacles, muſt be then ſtimulated into ſtronger, and more frequent contractions. A Fever is the name we give this conflict; and ſince it is cauſed here by a ſizineſs of the humours, we have ſurely a right to infer, that this very ſizineſs is the immediate, or efficient cauſe of the fever. But in oppoſition to our inference, it may be ſaid, that, ſometimes, there is a ſize without any perceivable fever; and again, that a fever often attends a local inflammation, without any immediate appearance of ſize. As to the firſt objection, it is certain, that a ſizy

cruſt

SECT. II. cruſt often appears on the blood of ſome, who labour not yet under a fever, but an uneaſineſs of ſome other kind. But what then? Is it becauſe this ſize is yet too weak, to produce a fever, that it ſhall produce none, when it becomes ſtronger? To give any weight to this objection, it would be neceſſary to ſhow, that if the bleeding had been neglected, and the uneaſineſs ſuffered to increaſe, no fever at all would follow: which, in fact, would be ſhowing what is contradicted by experience. With regard to the ſecond objection, it muſt be granted, indeed, that in ſome local inflammations, which give riſe to a fever, it happens frequently, that no ſize appears until the ſecond, or third, or even fourth bleeding; and the reaſon is, that ſuch inflammations are owing, either to a conſtriction of the ſmall arteries, or to an irruption of the blood into the lymphatics; or even to an extra-

extravaſation: and that, in all theſe caſes, ſome time is requiſite, before the lymph can be coagulated by the heat of the fever on one ſide, and the local ſtagnation on the other. But the moſt that this can prove is, that a ſymptomatic, and a real inflammatory fever are two different things; the one following, the other preceding a fixed inflammation. And therefore, I cannot but think it a ſtrange way of reaſoning, to contend, as ſome have done, that a coagulation of the humours is not the proximate, or efficient cauſe of an inflammatory fever, merely becauſe a ſymptomatic one can exiſt awhile without it. As to the remote, or occaſional cauſes, I have here nothing more to ſay concerning them, than that they are ſuch, as I have already ſhown, in ſeveral ſections, to have the power of coagulating the lymph. SECT. II

SECT. III.

The general ſymptoms of an inflammatory Fever accounted for.

SECT. III.

IT is well worthy of notice, that the ſize, which I reckon here, as an efficient cauſe, has not the ſame qualities in all people. In ſome, it is found both thick and tough; and in others but thin, though ſtill of ſome conſiſtency. The reaſon of this difference is, firſt, becauſe all perſons are not, in an equal degree, expoſed to the coagulating cauſe of the lymph; and ſecondly, becauſe in ſome conſtitutions, the lymph is, of itſelf, more diſpoſed to coagulate, than in others. Thoſe, in whom it coagulates moſt, are people of a ſound frame, and who, of courſe, have a very healing fleſh. Such people, in fact, are very ſubject to an inflammatory fever: whereas thoſe

SECT. III.

those are pretty much guarded against it, who carry about them an innate acrimony; and whose humours, therefore, must be in a loose, broken state. When the quantity of the size is but small, we must not expect, that it will then be as fit to create a variety of obstructions, as when it is a great deal more considerable; and therefore, though there should be only a lassitude in the first case, it is plain, that there must be a shivering in the second. As to the heat of an inflammatory fever, it depends chiefly upon the increased action of the heart; and the accelerated force, with which the humours are driven through the largest vessels, on account of the obstacles, which they meet with in the smallest. It is a remark, never to be forgotten, that in a true inflammatory fever, no petechiæ, or spots, ever appear. The reason is, that in this fever the humours are too thick, to run out of

SECT. III. their respective channels; and that when petechial spots appear, they are, as I shall show hereafter, an evident sign, that the blood is actually in a state of dissolution. The only eruption, peculiar to an inflammatory fever, is of the miliary kind: and that this is occasioned by a dilatation of the miliary glands, and a protrusion of their excretory ducts, is evident from hence, that no trace of it is ever found, until the sizy matter be attenuated so, as to be forced through these outlets, in the form of a profuse sweat. Before a crisis is formed, the urine is, for the most part, clear; because the substances, which heighten its colour, are retained in the size; and little or nothing besides its watery element is suffered to pass off. But, as soon as by the action of the body, and the force of attenuating medicines, this sizy matter is fitted for expulsion, then

then we obſerve, that the urine be- SECT. III. comes muddy, and depoſes a whitiſh ſediment. The bowels are not, for reaſons to be mentioned hereafter, any way tenſe in an inflammatory fever. They are bound, indeed, becauſe the juices, by which they are naturally ſtimulated into action, are rendered ſomewhat inert by the morbid ſizineſs, which prevails. But when this is corrected, they begin to be eaſily moved, and to contribute their mite to a general diſcharge. Concerning the ſymptoms, which belong to the head and breaſt, I ſhall only remark, that they are all owing to the degree, in which the veſſels of theſe parts are ſtuffed with the ſize which is conveyed to them by the courſe of circulation. And if the head and breaſt be, in general, more affected, than any other part, it is becauſe their veſſels are, comparatively, weaker, more tender, and more complicated. It is certainly

SECT. III. on this account, that the head itself is oftener affected, than the breast. For, except when there is a local weakness, arising from nature, or from accident, you may observe in an inflammatory fever, that for one, who feels the greatest pain in his lungs, or any where else, twenty complain of having the greatest pain in their heads.

SECT. IV.

Of the Prognostics.

SECT. IV. IN an inflammatory fever, it is a good sign, first, that there should be no chronical obstructions, as they render such, as are formed by the fever itself, more obstinate. Secondly, that the first symptom should be a lassitude, or, if there be a shivering, that it should be only a slight one. Thirdly,

Thirdly, that the urine ſhould come off freely: that it ſhould not, through the whole courſe of the diſorder, be altogether tranſparent: and that, at any time, eſpecially towards the decline of the fever, it ſhould depoſe a whitiſh ſediment. Fourthly, that the bowels ſhould not be hard to open, and that no ſtool ſhould be involuntary. Fifthly, that the heat ſhould not be intenſe, nor the ſkin dry; but that, on the contrary, there ſhould be a gentle moiſture through every ſtage of the diſorder; and a warm profuſe ſweat towards the end. Sixthly, that the breathing ſhould not be difficult, and that on either ſide the patient ſhould be able to lie quiet. Seventhly, that there ſhould be, now and then, a refreſhing ſleep; that, for ſeveral days, the patient ſhould retain his ſenſes; and that, if he come at laſt to rave, it ſhould be only in his ſleep; and even then, but ſlightly. SECT. IV.

SECT. IV.

And eighthly, that if there be any grievous symptom, it should yield to a skilful application of medicines; or, at least, that its violence should be, for a while, abated. These signs plainly show, that the size, which causes the fever, is neither so tough, nor so abundant, as not to be easily attenuated; and a physician, who observes them, may safely answer for a recovery. But, when an inflammatory fever begins with a great shivering; when the senses are disturbed early; when the heat is great; the skin dry; the bowels constipated; the urine but little, and of a transparent colour; in this case, the omen is far from being favourable. Not that there is yet an insurmountable danger, if the inward parts be all sound, and that, without any loss of time, proper remedies be applied. But, if there be any inward chronical complaint; or, if by delay, or improper manage-

management, the ſize be ſuffered to encreaſe, the ſcene alters very ſoon; and preſents a more gloomy appearance. The ſigns are, a conſtant watchfulneſs; the eye ſtaring, and inflamed; a tremulous motion of the tongue; an agitation of the whole nervous ſyſtem; an high delirium; a ſtifneſs of the joints; and involuntary ſtools. At this time, if the patient, though bliſtered, feel no pain; if, in ſpite of a copious bleeding, the hurry of his ſpirits continue much the ſame; if, when forced to drink, he ſwallow with difficulty, and be little, or not at all, affected by any thing, that is given, it is a ſure ſign, that the organs of ſenſation are irretrievably incumbered with the ſize; and that a final end is approaching. But the ſymptoms, which, next to an agony, indicate the neareſt approach, are a conſtant repetition of the ſame chimerical idea; fixed, glaſſy eyes; a contraction SECT. IV.

SECT. IV. on of the features; an alteration of the voice, a fluttering pulfe; and a laborious breathing.

SECT. V.

Cure.

SECT. V. SINCE, then, a fizinefs of the ferum, or of that part of the lymph, which circulates conftantly with the blood, is the caufe of an inflammatory fever, the curative indication muft be very evident. But, to effect an attenuation, which is the only point we fhould have in view, there are feveral means to be adopted. Firft, the heat muft be moderated: otherwife, it would counteract the force of attenuating medicines, becaufe, of itfelf, it is capable of rendering the lymph fizy. Secondly, as the humours circulate with great difficulty in the fmalleft veffels; and

with

SECT. V.

with great rapidity in the largeſt; it is plain, that, to expedite their motion in the one; and to retard it in the other, their quantity muſt be leſſened. This caution is by ſo much the more neceſſary, as, without it, the lymph would be ſtill made to ſtagnate in the capillaries; and various experiments ſhow, that ſtagnation alone is ſufficient to coagulate it. Beſides, a diminution of the humours is neceſſary upon another principle. For, by reſtoring the tonick force, which the veſſels had, in a great meaſure, loſt, by being obſtructed in one place, and too much diſtended in another, it enables them to act upon their contents, and, conſequently, to break and divide the ſizy matter. Thirdly, as this ſize, when once it is impacted in any one part, is forced ſtill further by every ſucceeding impulſe of the humours, it is obvious, that the momentum, with which the humours flow

SECT. V. to this part, should be weakened; and this is to be done, partly, by lessening their quantity, and partly, by the means of revulsion. Now, to answer these purposes, several things are recommended; but I know of none, more effectual, than bleeding. To bleed in an inflammatory fever, and, indeed, in every species of inflammation, is a practice, quite as ancient, as the institution of physick: and how much soever physicians differ in other points, they all equally agree in this. But there is not the same unanimous concurrence between them, when they come to determine, how much blood should be drawn off at any one time; and how often the bleeding should be repeated. Some are for bleeding largely, five or six times, even though the fever should not be very considerable. Others again think it sufficient to bleed twice in the most alarming cases; and, at each

each time, to bleed but ſparingly. My opinion is, that a middle courſe ſhould be followed, and this I purpoſe ſhewing hereafter. SECT. V.

SECT. VI.

Why other Evacuations are neceſſary.

I DO not, however, mean, that, to obtain a cure, it is always e-nough, to draw a proper quantity of blood. For, though a part of the ſize, which cauſes the fever, is carried off at each bleeding, yet, as it is blended with the whole maſs of blood, ſome parts muſt remain behind; and, until the whole cauſe be removed, we cannot expect a perfect recovery. Indeed, if the remaining ſize could be ſo changed, as to be aſſimilated to our humours, we might then hope to cure the fever without promoting the natural evacuations. SECT. VI.

But

SECT. VI. But such a change is, I believe, impossible; and for this reason, that the lymph, when once coagulated, can never be refitted so, as to answer the end, it was destined for. Just as when you harden the white of an egg, which bears a perfect resemblance to lymph, you can never restore it to its primitive fluidity, and smoothness. So that, totally to get rid of an inflammatory fever, the size must be entirely expelled. But, as there are three principal outlets, and those too of different capacities, it may not be easy to determine, which of them is fittest for the expulsion. Certainly, as the matter, which passes through the pores of the skin, is more attenuated, and subtile, than what goes off by urine, or by stool, and, as this sizy matter is then carried off most, when it is most attenuated, we have reason to conclude, that, of all evacuations, the most desirable one is that of perspi-

ration.

ration. And, indeed, if we conſult experience, we ſhall find, that, without a copious perſpiration, and this too of ſome continuance, the criſis of an inflammatory fever is always imperfect. But, ſalutary as this diſcharge may be, we ſhould take care never to force it on, by ſtoving the patient; by loading him with bedcloaths; or giving him hot cordial medicines. Such a practice muſt neceſſarily defeat itſelf, as we ſhall ſee in the following ſection. Inſtead, therefore, of purſuing it, a phyſician ſhould cooperate with the effort of nature; and this he will ſurely do, if by cooling, laxative, and diuretic medicines, he carries off, through the larger outlets, what is yet too groſs, to paſs through the narrow pores of the ſkin. Thus, by freeing the veſſels from a great part of their incumbrance, he will put them in a condition to attenuate the remainder, and, of courſe, to prepare it for a critical perſpiration. SECT. VI.

SECT.

SECT. VII.

Whether or no Blisters be proper.

SECT. VII.

IF to attenuate the sizy matter, and to expel it from the body, be a true indication in an inflammatory fever, it must be granted, that, to answer this purpose, the use of alexipharmick bolusses, of aromaticks, and tinctures, is highly improper. These hot drugs have no attenuating quality whatsoever. On the contrary, they are very fit to coagulate the serum, partly, by their own action upon it; and, partly, by increasing the feverish heat, which I have already remarked to be, itself, a powerful cause of coagulation. This I take to be an incontestible principle; but I think it is misapplied by those, who condemn the use of blisters. It is certain, that by their stimulating quality, blisters quicken

SECT. VII.

en the circulation, and that, by this means, they occasion a transitory degree of heat. But it is no less certain, that, by being absorbed into the blood, their salts attenuate all the humours. So that, if there be a temporary disadvantage on one side, there is a lasting advantage on the other; and to determine which of them preponderates, we must have recourse to experience, to which the final appeal must be in physick. If, then, by raising the heat, blisters coagulate the lymph more, than they attenuate it, by mixing their saline particles with the blood, it should necessarily follow, that, after they cease to operate, the symptoms of a coagulation should appear greater, than before they were applied. But experience shows the reverse. For, when blisters are seasonably applied, and their power no way counteracted by an unmeaning jumble of hot medicines, we find, that imme-

SECT. VII. diately after their operation, the heat is leſs, the pulſe quieter, and the fever itſelf ſomewhat abated. A proof, ſurely, that the good effects, which they produce, as attenuants, outweigh by much the evil, which they are ſaid to produce, as ſtimulants. Nay, I am ſure, that this ſtimulating quality, itſelf, how much ſoever it may be apprehended by ſome, is often of ſervice in an inflammatory fever, particularly, in thoſe caſes, wherein it is neceſſary to raiſe the pulſe, to create an artificial drain, and to procure a revulſion of humours.

SECT. VIII.

Of other Attenuants.

SECT. VIII. THERE are ſeveral other ſubſtances, which are diſtinguiſhed by their attenuating quality, and which, therefore, are recommended in this fever. Thoſe, which hold the firſt

SECT. VIII.

firſt rank, are preparations of mercury and of antimony. But, though the chief indication be to attenuate, one ſhould be on his guard, not to attenuate too much, as it is a wrong method of proceeding, to run into one extreme, in ſtriving to get out of another. Beſides, where the fibres are tenſe, where the veſſels are ſtuffed, and where the momentum of a denſe, ſizy blood is already too great, it would, I think, be hazarding the rupture of ſome veſſels, to convey into the courſe of circulation any medicine, that muſt operate with an extraordinary degree of force. Now, the ſpecifick gravity of mercurial preparations gives them this force; and therefore it is, that in an inflammatory fever, I do not reckon it ſafe, to order any of them; not even calomel, which is the mildeſt of all. But the ſame objections cannot, with equal propriety, be made to all the preparations of antimony. Some of theſe are

SECT. VIII. given in every ſtage of the diſorder; and are found, when managed properly, to be very ſucceſsful. Thoſe, that are uſed moſtly, are the emetick tartar, the antimonial wine, and the kermes. As to the laſt, we find it of ſervice, when the cheſt is principally engaged, when the heat is not great, when the fever is ſpun into a certain length, when the pulſe is ſunk; and that the lungs are loaded with tough phlegm. In theſe circumſtances, a great deal is expected from its inciſive quality; but in other caſes, I look upon it to be too heating, and too ruffling, to be given with ſafety. The emetick tartar is the only preparation of antimony, that is reckoned fit for all inflammatory caſes; and, I believe, very juſtly. For, without having the heating quality of other antimonials, it is inferiour to none in point of efficacy. It mixes more readily with every kind of vehicle; and is leſs liable to be altered in

its

its virtue by any. The common neutral ſalts, nitre, ſal polychreſt, ſoluble tartar, regenerated tartar, &c. all theſe ſalts are well known to be mild attenuants, and to have, what is deſirable here, a cooling quality. But, of all neutral compoſitions, I know of none more valuable, than the ſpirit of Mindererus. And, if to theſe reſources we add the aſſiſtance, we draw from the juices of tartiſh vegetables; from camphire, and even from muſk itſelf, I believe nothing more remains to fill up the catalogue of uſeful attenuants. SECT. VIII.

SECT. IX.

Of Dilution.

THE neceſſity of diluting ſizy humours is clearly pointed out by nature, our ſureſt guide. For, though averſe to food, ſhe has a craving for drink; and if in a high fever the contrary ever happens, it is not that the SECT. IX.

SECT. IX. appetite of the patient is good; but that his organs are vitiated. A proof of this is, that he has no ſuch perverſe deſire, until he begins to rave; and, as it is an exception to a general rule, ſo it is reckoned one of the worſt of ſymptoms. When we wiſh to remove an extraordinary heat, and to quiet a violent agitation, which are both cauſed by a ſizineſs of the humours, what better expedient can we think of, than that of diluting theſe humours? Water is the moſt general diluter we know of; but water alone cannot dilute every thing. For inſtance, it will not mix with the hardened white of an egg, nor with oil; and to qualify it for a mixture, we muſt impregnate it with certain ingredients. Now the ſame rule holds good with regard to coagulated ſerum, and even the greaſe of the body. Water, when ſimple, can dilute neither. For which reaſon, the urine is always clear, and colourleſs, when

SECT. IX.

when the drink is watery, and insipid; and therefore it is necessary, that to whatever is taken, by way of drink, some sugar, or vegetable acid, or both, should be added. Thus an excellent drink is made by sweetening light barley-water with brown sugar; and adding as much lemon juice, as is sufficient to give it a tartish taste. Two-milk whey, or what is still better, light vinegar whey naturally contains these ingredients, though in a small degree; and is therefore reckoned, even alone, a very fit drink, not only in this, but in every other fever. But, whether the patient gives a preference to either of them, or whether he uses both, alternately, it is certain, that he ought to drink a great deal. From six to eight quarts, in the four-and-twenty hours, cannot be deemed too great a complement, when we consider the necessary call there is for it, not only to restore the fluidity of the humours; and to com-

SECT. IX. pensate, in some measure, for the losses which the body sustains, while the struggle holds; but also to relax the inward parts, and to produce the effect of a tepid bathing. Towards the decline of the fever, when nature is somewhat disincumbered, and in a better condition to feel her wants, a little white-wine whey should be given now and then. Nor should it be forgotten at any period, if the fever be low. For, though medicines contribute a good deal, it must be confessed, that the fever itself, or, in other words, that the increased action of the vessels has the greatest share in attenuating the morbid size. The whole business, then, of a physician is, to take care, that this action should be always in a proper degree, neither too high; nor too low. This was a maxim of the great Sydenham; of whom it is justly said:

Innocuas placide corpus jubet urere flammas;
Et justo rapidos temperat igne focos.

As

As ſoon as the patient begins to recover from the conflict, and to have a deſire for broth, or any kind of light food, he ſhould be gratified; but with this caution, that while he remains confined to his bed, every thing he takes ſhould be made agreeably tartiſh. The reaſon of this ſhall appear, when I come to the cure of a putrid fever. SECT. IX.

SECT. X.

Application of the foregoing principles.

IN the treatment of any diſorder, there is, no doubt, an allowance to be made for a difference in age, and conſtitution. The doſe of medicines, and the quantity of evacuations, which are fit for a ſtrong grown-up perſon, are very unfit for thoſe, who are young, or old, or of a delicate frame. But, except thoſe two points, the mode of preſcribing for all, who labour under the ſame complaint, ſhould be exactly alike, SECT. X.

SECT. X. alike, or with very little difference. Suppose, then, for the sake of clearness, that a man of a strong constitution is seized with an head-ach, a general lassitude &c. and that the moment he begins to complain, a physician is called in. At this time, it is no way difficult to know, that there is a fever. The symptoms are too obvious to leave any room to doubt of it. But then to determine positively of what sort the fever is, and whether, or no, it will continue long, this, I believe, is not in the power of any physician. Nor is it at all necessary, that it should. For how different soever the management may be, when fevers are, for some hours, confirmed, it is a just remark, that, at the very beginning, there is one mode, which is common to them all; and which may, therefore, be adopted with safety. That is, to order the patient to bed, to advise him, if not corpulent, to take a vomit;

and,

and, after its operation, to drink largely of warm vinegar-whey. The design is, that, whilst the cause of the fever is yet weak, the encreased action of the body, the relaxing warmth of the bed, and the diluting quality of the drink, may possibly remove it. SECT. X.

SECT. XI.

The same subject continued.

BUT if this method should prove insufficient the first night, I do not think, that, without examining the blood, a physician can proceed much farther with any satisfaction to himself, or security to his patient. For, to prescribe without a diagnostick, is to prescribe at hazard; and certain it is, that without knowing what state the blood is in, no one can form a sure diagnostick; because, at this early period, all other considerations amount only SECT. IX.

SECT. XI. only to a probability. To have, then, an infallible guide to go by, I order that through a *large* orifice, and in a *full* ſtream, a *ſmall* quantity of blood ſhould be drawn from the arm: and though theſe particulars may ſeem trivial, I take them to be of ſome conſequence. Firſt, becauſe, if the blood were to trickle down the arm, or to ſpout out, ſo as in its fall to reſemble a ſlender thread, it could not be ſo fit to anſwer the purpoſe of an examination; and ſecondly, becauſe, if the fever be a true inflammatory one, I can again have recourſe to large bleedings; whereas, if it be of the putrid kind, a large bleeding ſhould be carefully avoided, though a ſmall one cannot, in the leaſt, be prejudicial. At this viſit I preſcribe ſome ſaline draughts, with, or without camphire; ſome papers of rhubarb with ſal polychreſt, or nitre; and thus far I am of opinion, that the method of cure is

general,

general, and may be practiſed at all events. But if, upon viſiting the patient in the evening, I find the blood covered with a whitiſh buff-like ſubſtance, I immediately begin with what is adapted to the inflammatory fever in particular. I order a ſecond bleeding, and I regulate the quantity by the nature of the ſymptoms, and the conſiſtency of the ſize. When theſe are ſlight, I think it enough for the patient, whom we have ſuppoſed to be of a ſtrong frame, to loſe about twelve ounces of blood. But if they be conſiderable, as when the ſize is both thick and tough; the heat great; the pain of the head very acute; or the breathing difficult; in this caſe, I give directions, that he ſhould continue bleeding, until he feels himſelf grow weak. After this, I adviſe him to make the ſame effort as the night before: and to co-operate with the action of the vinegar whey, in attenu-

SECT. XI.

ating

SECT. XI. ating the sizy matter, and promoting perspiration, I order that every two hours he should take three spoonfuls of a mixture, composed, partly of mint-water, partly of the spiritus mindereri, and two grains of tartar emetick.

SECT. XII.

Continued.

SECT. XII. IN the morning of the third day, if I do not find the fever on the decline, I judge it must run to a certain length; and without making any further attempts to shorten its duration, I think it sufficient to moderate its violence. I order a third bleeding, and, if the head be engaged, I think it better to bleed in the foot; because no revulsion is made by bleeding in the arm; and that when either the temporal artery, or jugular vein is opened, the patient grows weak, before

fore a ſufficient quantity of blood can be drawn. The formula, which I uſe then, and which I continue during the whole courſe of the fever, is this: SECT. XII.

R. Camphoræ ſcrup. unum; tere cum paucis amygdalis; et poſtea gradatim affunde aq. menth. ſimp. unc. ſeptem; colaturæ adde ſpirit. mindereri unc. tres; tartari ſtibiati gr. duo. M. cap. cochlearia duo ampla ſecundâ quâque horâ.

On the evening of this day, if the ſymptoms be ſtill increaſing, I order bliſters to be applied; (to the legs, when the head is principally engaged; or to the back, when the chief complaint lies in the cheſt) and the following morning, if the fever be not at a ſtand, I get him blooded again in the foot. In the mean time, I pay a cloſe attention to the ſtate of the bowels; and, as I deem it neceſſary for the patient to go, four or five times,

in

SECT. XII. in every four-and-twenty hours, to stool, I order two scruples of rhubarb, and one drachm and an half of sal polychrest to be divided into eight parts; and one of them to be taken, occasionally, every second, or third, or fourth hour. All along, the drink should be light vinegar-whey; and in every quart of it a scruple, or half a drachm of nitre, should be dissolved. The only attainable point at this period of the disorder, is to reduce it to an uniform tenour; of which, if no sign appears on the morning of the fifth day; and that, on the contrary, there is reason to apprehend a phrenzy, a symptom very common in an inflammatory fever; and which is easily discovered by the fiery looks of the patient; by the violent agitation of his whole body; and by his wild, incoherent speeches; in this case, I order him to be blooded again, ad deliquium fere animi, in the foot; and immediately

immediately after, to be bliſtered on the back. Nay, my chief dependence is upon another bleeding, if the violence of the ſymptoms ſhould require it. SECT. XII.

Not long ſince, I had a patient in the very circumſtances I mention here. He was of a middle age, and of a very robuſt habit of body. By an abuſe of ſpirituous liquors, he was ſeized with an inflammatory fever, which I had an opportunity of attending him in from the very beginning. I do not recollect to have ever ſeen a more ſizy blood. The cruſt which covered it, was an inch thick, and ſo tough, that it reſiſted pulling, much like leather. On the morning of the fourth day, though I had taken every early precaution, that my judgment could ſuggeſt, to hinder the fever from running high, the patient became phrenetick; and ſo much ſo, that three

SECT. XII. men were hardly able to keep him in bed. His struggles to get loose showed, that he had an uncommon degree of strength; and yet his pulse was sunk, hardly perceivable, and his whole skin covered with a cold, clammy sweat. Racks, gibbets, murder, lightning; all, in wild confusion, crowded upon his disordered brain: and when pressed to drink, he set his teeth, closed his lips, and appeared, in some measure, as if he had a locked jaw. In this situation, I was for a while in a suspence, how to relieve him. I knew that the state of his brain, and the nature of the disorder, required more bleeding; but then the state of his pulse, and the cold clammy sweat seemed to forbid it. At last, upon considering, that he had been eased by every one of the preceding bleedings; and that this sudden alarm was owing to the sizy matter's being forcibly impacted in the vessels of the brain,

brain, I determined again to get him bled in the foot. I ſtood by during the operation, which I took care to carry on almoſt ad deliquium; and thereby I had the ſatisfaction of perceiving an immediate calm. This laſted until the following day, when the ſame ſtorm began to gather; and, what I did not perceive till then, the pulſe was not only low, but fluttering. This additional ſymptom was truly alarming; but I was encouraged by my former ſucceſs to overlook it. I had again recourſe to bleeding; and the event proved equally fortunate. For, before I left the patient's room, the hurry of his ſpirits was abated: he fell into a profound ſleep; and the morning after, I found him in, what I long wiſhed for, a profuſe ſweat. It was then I took it for granted, that the ſizy matter had been attenuated ſo,

SECT. XII.

SECT. XII. as to paſs freely through all the outlets. Nor was I miſtaken. For, from that time, until the thirteenth day, when the fever intirely quitted him, the patient continued ſleeping, now and then; ſweating conſtantly, more or leſs; and depoſing in his urine a whitiſh ſediment, not unlike the inflammatory cruſt itſelf, when reduced into powder.

CHAP.

CHAPTER II.

SECT. I.

Putrid Fever.

ALL acute diſorders begin, for the moſt part, with alarming ſymptoms. People then are put on their guard; and their ſufferings force them to ſeek ſome aſſiſtance. But a putrid fever, though certainly acute, is ſcarce perceivable at firſt. Not that the body is, even then, at its eaſe; but the firſt workings are ſo faint, that they are not much attended to. Perſons thus affected, are not well enough to go about buſineſs, with their uſual alacrity; nor ſick enough to be wholly confined. In this inſidious manner, the fever creeps SECT. I.

SECT. I. on, for two, or three days, and sometimes more; not declaring itself openly, and yet sinking the spirits of the patient. From this character it may seem just, to draw the definition of a putrid fever; and it certainly would be so, but for two reasons. The first is, that though its general type be such as I have described, yet it happens sometimes, that, on its very first advance, it gives a full alarm. The second is, that other fevers steal on, sometimes, insensibly; though, in general, they attack without disguise. As to the other apparent symptoms of a putrid fever, they help as little to define it. These symptoms are mostly changeable, as I shall show, when I come to treat of them; and, surely, a definition, that rests upon appearances, without which the thing defined can exist, must be deemed very inaccurate. The only unalterable mark, that I know of, and, indeed, the only one,

one, that conſtitutes the eſſence of this diſorder, is a tendency of the humours to a ſtate of diſſolution. By this, it is true, that a putrid fever cannot be diſtinguiſhed from an ardent fever, from a malignant fever, from a petechial fever, or even the plague itſelf: But ſtill it remains true, that all theſe are of the ſame ſpecies. The only difference is, that in ſome of them, the humours are diſſolved ſooner, and much more, than in others. But to me this does not appear a ſufficient cauſe, why they ſhould not all have the ſame characteriſtick. With reſpect to its degrees, the attribute of reaſon varies in various individuals; and yet it ſerves as a mark, by which to diſtinguiſh mankind. The very ſize, which conſtitutes an inflammatory fever, differs in different people, both as to its denſity and toughneſs: and, nevertheleſs, we look upon it, as a ſufficient mark of diſtinction. On SECT. I.

SECT. I. the fame principle, then, I call that a putrid fever, in which a broken texture of the humours is more or lefs evident.

SECT. II.

The proximate, or efficient Caufe.

SECT. II. TO acquire a true knowledge of this diforder, we muft confider, attentively, what happens when the humours make the firft advance to putrefaction. That they are then expanded, is eafily proved. Break any globular body into different parts, and, though you cannot thereby change the mafs, you will, certainly, make a confiderable change in the furface. For the furface of any one body cannot equal the fum total of the furfaces of the parts, into which it is divided. But it is admitted, on all hands, that blood is compofed of globular parts; that

SECT. II.

that each globule is made of others ſtill ſmaller; and that the ſame mechaniſm prevails in the integral parts of the lymph. As ſoon, therefore, as, by any means, theſe globules are ſuddenly broken, it is a neceſſary conſequence, that they ſhould occupy more room, than they did before, when each of them was entire, and pretty firm. To this we may juſtly add, as an auxiliary, the effect, which is produced by the eſcape of fixed air. Whilſt the humours remain in a ſound ſtate, this neceſſary ingredient makes no effort to recover its elaſticity; but when their texture is broken, we all know, that it expands itſelf to a very great degree. Of which we may obſerve an inſtance in the courſe of any fermentation; inſomuch, that, to prevent the rupture of the veſſels, wherein the work is carried on, a proper vent muſt be given. Now, to my mind at leaſt, it ſeems pretty clear, that the expan-

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SECT. II. sion, which is capable of distending the vessels of our frame, must be sufficient, even alone, to disturb the freedom of circulation. But there is another concomitant reason. For then the globules of the blood cannot but be forced into channels, from which, in a natural state, they are ever excluded. So that, partly, by the very expansion of the blood, and, partly, by its irruption into some of the serous vessels, a variety of obstructions must be formed, sufficient to quicken the motion of the heart; and here I fix the efficient, or proximate cause of a putrid fever. With regard to the remote, or occasional causes, it is plain, that they are such, as are acrid themselves, or any way qualified to induce such an acrimony, as must produce a ferment, or an intestine motion. In the first part of this inquiry I have dwelt upon this subject, perhaps,

haps, too long; and ſhall not therefore enter now into a further detail. SECT. II.

SECT. III.

Symptoms.

TO preſerve ſome order in the narration of the ſymptoms, I ſhall divide the courſe of this fever into three ſtages. I have hinted already, what is common in the firſt. In this ſtage, it rarely happens, that there is any great ſhivering: this ſymptom appearing only, when the diſorder ſets out very violent. Whereas, when it comes on ſlowly, as it uſually does, nothing more is felt, at firſt, than ſome ſlight interchanges of cold and heat, and ſometimes a mixture of both. This ſenſation alone is ſufficient to make the patient uneaſy; but it is often accompanied with, or, at leaſt, ſoon followed by, another, which trou- SECT. III.

SECT. III. troubles him more. I mean, an uncommon wearineſs all over, which is too teizing not to be ſeverely felt; but which cannot be well expreſſed. The patient ſeems, as if he had been jaded by a long journey; or exhauſted by ſome bodily labour, with this additional grievance, that he has now a diſreliſh for food, and that every ſucceeding moment, inſtead of contributing to his eaſe, adds ſtill more to his complaint. This, however, is not without exception. In the beginning, ſome patients have a few lucid intervals. But this favourable aſpect is of a ſhort duration. A weighty load of ſickneſs bears them down at length; and after a ſtruggle of three, four, and ſometimes five days, they are forced to confine themſelves to their bed.

HERE the ſecond ſtage begins; and it is generally from hence that we date the ſickneſs. The different parts of the

the body, but chiefly the back and loins, are now weary, and painful; just as if they had been beaten, or bruised. And though the patients often stir themselves to find out some easy posture, they complain greatly of being hurted, when they are stirred by others. At this time, the head, the chest, and even the stomach, are affected very much. There is often an inclination to vomit; and what is thrown up, is of various colours, but resembles mostly corrupted bile. The countenance has a gloomy cast. It is bloated, and, as it were, dead-coloured. The eyes are heavy, full, somewhat yellowish, or suffused with a redness, and very expressive of an agitated state of mind. There is a loathing, a sinking, and an extraordinary weakness; and yet it frequently happens at this period, that the pulse is not much agitated; that the heat of the skin is not very great;

SECT. III.

SECT. III. great; that the thirst is not considerable; that the tongue is moist; and that the evacuations, by stool, and urine, are almost natural. This inequality in the symptoms gives the disorder the appearance of malignity; for which reason, we call it, sometimes, a malignant fever. But the scene changes, as it advances. The pulse then begins to beat quick, and its strength declines, as its frequency increases. In some, the skin is somewhat moist; in others, it is quite dry: some have profuse sweats; but all have more or less of a scorching heat. By degrees, the tongue grows foul, and parched, with deep chops; and, if care be not taken to keep it clean, it becomes covered with a tough mucus, brownish at first, but blackish at last. A furring, like this, gathers about the lips; and the roots of the teeth: and if the patient then retain his senses, he has, for the most part, an unquench-

quenchable thirſt. In the mean time, if not before, the bowels become ſomewhat tenſe. The ſtools, which begin to be frequent, are thin, of different colours, and extremely fetid. The urine too has a ſickening ſmell. In colour and quantity, it varies from day to day. At the height of the diſorder, the quantity is commonly ſmall; and the colour inclined to red; but towards the cloſe, it becomes darker, like dead, or high-coloured beer; and if there be a ſediment it is generally of a duſkiſh hue. Whilſt theſe ſymptoms are acquiring ſtrength, thoſe, which appeared at firſt, keep pace along with them. The miſt thickens, the confuſion encreaſes, and the patient at length falls into a ſtate of inſenſibility. SECT. III.

I CALL this the third ſtage; and though ſome get into it much ſooner, it ſeldom begins until from the ſixth

SECT. III. to the eleventh day. In this ſtage, all patients are not equally affected. Some are delirious, and conſtantly watchful; ſome drowſy, and even lethargick: whilſt others are in a mixed condition, hard of hearing, and in ſome degree of ſtupidity. With regard to their raving, it is obſervable, that it ſeldom amounts to thoſe high flights of wildneſs, common in an inflammatory fever; and that nothing, but an unſeaſonable uſe of hot medicines can raiſe it to that degree. But as the ferment ſtill encreaſes, we perceive a tremor of the hands; a ſtarting of the tendons; ichorous, involuntary ſtools; and, in fine, an aggravation of all the foregoing ſymptoms. As to the petechial eruption, which belongs to this fever alone, it is very changeable, with regard not only to the time of its appearance, but alſo to its colour and ſize. Without dwelling upon its variations, I ſhall content myſelf

ſelf with this remark, that, whether it appears ſooner or later, whether it be circumſcribed, like flea-bites, or extended into large, irregular, angry blotches; whether it be red, or of any duſkiſh colour, down to a black; that all this depends upon the time, at which the blood is diſſolved; and the manner in which a greater or ſmaller quantity of it is extravaſated. It is on the ſame principle, that we can account for the hemorrhages, which are common in this fever, not from the noſe only, but from other emunctories. SECT. III.

SECT. IV.

Prognoſtics.

IT is a good ſign, firſt, that for ſeveral days after his confinement, the patient ſhould not be much agitated; nor his ſtrength much exhauſted. SECT. IV.

SECT. IV. Secondly, that he should not have a dry, scorching heat; and that the sweat, if any, should not be profuse. Thirdly, that the bowels should not be swollen, nor hard, nor constipated; and yet that the stools should be neither involuntary, nor ichorous. Fourthly, that the urine should not be in a small quantity; nor of an high, reddish colour. Fifthly, that the breathing should not be very quick; nor, at any time, intercepted. Sixthly, that the delirium should not be very great; and that the patient should be neither watchful, nor lethargick. Seventhly, that there should be no tremulous motion in the hands, nor starting in the tendons, nor convulsion in the features. Eighthly, that the tongue, though foul, should not be covered with a black dry fur, nor in the least chopped. Ninthly, that there should be no difficulty in swallowing, nor an insensibility of what is taken. Tenthly, that

that the body ſhould not be ſo ſtiff, as to be obliged to lie in a ſupine poſture only. And laſtly, that no petechial ſpots ſhould appear early; and that if they ſhould come forth towards the height of the fever, they ſhould not be broad, nor livid, nor angry. In theſe circumſtances, we have reaſon to believe, that the inteſtine motion of the blood is not great; and, conſequently, that nature will triumph, even alone; or, at leaſt, that ſhe will want but little aſſiſtance. Nor is there, indeed, very much to be apprehended from a concurrence of many of them; provided they do not appear, until the diſorder is far advanced, and that proper relief is then adminiſtered. I except, however, a dry, ſcorching heat, or, what is ſtill worſe, an acrid, ardent one, with very profuſe ſweats. Theſe ſymptoms are truly alarming at any period; the one denoting a violent attrition, and the other a reſolution of

SECT. IV.

SECT. IV.

the globules both of the serum, and blood; which I dread so much, that whilst they are absent, or appear only in a moderate degree, I do not despair, even though other symptoms should be, at the height of the disorder, very considerable. The best that can happen then, is a slight hemorrhage from the nose; or a gentle diarrhœa, of which I mean to show the utility hereafter. But, if at the commencement of the fever, or at a period not distant from it, we observe those symptoms, which, even on the eleventh day, give cause to fear, we may then be sure, that the patient is exposed to very great danger. Not that he would be so, if it were easy, for a number of days, to keep things in the same situation they appear in then, or, at least, to hinder them from becoming worse. But this advantage cannot be well expected; because it is the nature of a putrefactive ferment, or, in other words, of an intestine motion

tion of the blood, to riſe to an higher degree, as it advances. The rapid progreſs, which it makes, is clearly indicated by an increaſe of the ſymptoms; and, if to theſe we add what a further growth will ſurely produce, the ſcorching heat, and profuſe ſweats, which I have mentioned above, there can be no doubt but that an agony will ſoon follow. SECT. IV.

SECT. V.

Cure.

I HAVE ſaid, that the proximate cauſe of this fever, is a putrefactive ferment, raiſed in the humours; and of this it is, perhaps, no ſmall proof, that the whole cure conſiſts in governing this ferment, and giving a right turn to its motion. But, to ſucceed in this point, we muſt previouſly conſider for what end the motion it- SECT. V.

SECT. V. ſelf is raiſed, and what changes it produces in the body, during its exiſtence. Theſe conſiderations are by ſo much the more neceſſary, as, without the firſt, we might ſuppreſs the ferment too ſoon; and, without the ſecond, we might ſuffer it to run too high. Firſt, then, that it is raiſed to free the blood from ſeptick particles, conveyed to it by the means of contagion, or interwoven with it by an abuſe of the non-naturals, cannot be doubted; ſince, as ſoon as a thorough depuration is made, the body recovers its natural tranquility: and, ſecondly, that, while it exiſts, it tends to corrupt the whole maſs of fluids and ſolids, can, I think, as little be doubted. Witneſs the reſolution of the blood, and the flaccidity of the fibres; the offenſiveneſs of the ſweats, and of other evacuations; the number of livid ſpots, and other mortifying blotches; all which are common in this fever,

and which it is impoſſible to account for upon any other principle. From hence, it appears, that as a moderate ferment is neceſſary, and ſhould therefore be ſupported, becauſe, without it, no ſeparation can be made of what is tainted from what is pure; ſo, too great a ferment ſhould be reſtrained; becauſe, if ſuffered to operate on, it would ſpread corruption ſtill wider; and elude at laſt the force of medicines. Theſe two points are, in my opinion, the only curative intentions a phyſician ſhould have. Let us examine what he muſt do to fulfil them. SECT. V.

SECT. VI.

Whether or no bleeding is proper.

IN the beginning, when the ſymptoms run high, ſome think it neceſſary to bleed often; and this they do SECT. VI.

SECT. VI. do upon a presumption, that inflammations are then forming in different parts of the body. Indeed, to say nothing of what passes internally, it is evident, from the colour of the eyes, and the red spots, which appear on the surface of the skin, that there is a suffusion; or, in other words, that there is an irruption of blood into the serous vessels. And how could it be otherwise? The blood cannot be dissolved, without being expanded in the same proportion; and whilst it is in this state, we can readily conceive, that a slight agitation is sufficient to force it out of its proper channels. Thus it is, that hemorrhages are brought on; and the bloody sweats, and bloody urine, which have been observed in pestilential fevers, cannot be ascribed to any other cause. But, surely, to remove this mode of inflammation, (if, in the present case, it may be called by that name) the surest

SECT. VI.

ſureſt way is, to check the ferment, that occaſions it. And can this be done by repeated bleedings? When you wiſh to make a ferment operate ſlowly, will you ſucceed the better, by taking away a part of the fluid to be fermented? In my mind, you may almoſt as well, to quench a flame, take away, firſt, a part of the materials, and then throw gun-powder on the remainder. Beſides, we know, that when a fermentative motion is raiſed in the humours, it is, in a great meaſure, counteracted by the firmneſs of the blood itſelf; and by the tonick action of the fibres. And is it conſiſtent with reaſon, that to bleed often, is a means of increaſing both? Experience, at leaſt, evinces the contrary. They, who have ſucceeded moſt in curing the plague, which holds the firſt link in the chain of putrid fevers, have made no mention of bleeding, or mentioned it only to condemn

SECT. VI. demn it. The lancet is seldom, if ever, used in warm climates, where putrid disorders are very rife. And, amongst ourselves, does not common observation show, when the fever is putrid, and no way complicated, that, after every large bleeding, the symptoms become a great deal worse? With regard to the hemorrhage from the nose, which is a pure effort of nature, and which may seem, therefore, to indicate the necessity of bleeding, we must observe, that, to be salutary, it should be only slight. A mere show of it is certainly to be wished for; not because it lessens the quantity of the blood, that circulates; but because it unburdens the vessels, in which some blood, that had been thrown out of the natural course of circulation, had stagnated. However, I do not disapprove a small bleeding at first. On the contrary, I look upon it then to be absolutely necessary. For, without

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feeing the blood, it is fcarce poffible, at an early period, to form a true diagnoftick; and he who prefcribes in phyfick, without this guide, may juftly enough be compared to a pilot, who drives about in the wide ocean without a compafs. SECT. VI.

SECT. VII.

Concerning other evacuations.

WHILST any thing putrid lies in the ftomach, or inteftines, every one knows what the body fuffers. No part is free from an uneafy fenfation; and if by puking, or purging, or both, the caufe be not removed, before it reaches further, we doubt not, that a fever may follow. Is it not then a neceffary confequence, that the very fame thing fhould keep up, and even increafe a fever, which is by other means already kindled? To my apprehenfion, SECT. VII.

SECT. VII. prehension, nothing is clearer: and, that during the course of this fever, there should be something more or less putrid in the intestines, is equally certain. For it is a maxim, that the secretions partake of whatever state the blood is in: so that, when the spring itself is tainted, that, which flows from it, must be so likewise. This is true with regard to all the secretions; but it is more particularly so, with respect to the bile; which, even in a natural state, is, of all humours in the human body, the most apt to putrify; and which, of course, must be still more so, when a general tendency to putrefaction actually prevails It follows, therefore, that, to cleanse the bowels, in the beginning of a putrid fever, and to keep them clean during the course of it, is the first step, that should be taken towards a successful method of cure. Next to this, we should not forget to promote the discharge of urine,

urine, and, in a ſlight meaſure, that of perſpiration. They are the principal drains, through which we may expect to purify. But, though nature points out the neceſſity of ſuch evacuations; ſince, of her own accord, ſhe brings on a puking at firſt, and a purging after; yet, in co-operating with her efforts, we ſhould uſe no violent medicines. All mercurial preparations diſſolve the humours. Thoſe of antimony do the ſame. It is evident, then, that neither the one, nor the other, ſhould be given in a putrid fever, where the danger is by ſo much the greater, as the humours are in a ſtate of diſſolution. On this principle, every unbiaſſed perſon may eaſily judge, whether or no it be ſafe, at leaſt in this caſe, to give Doctor James's Powders. There is ſo much induſtry uſed in keeping theſe powders a profound ſecret, that, though it were thought worth while to analyſe them, no one can

SECT. VII. can be ſure of diſcovering all the ingredients, that enter into their compoſition. But, be this as it may, it is certain, from their mode of operation, that they contain, among other things, if not ſome mercurial preparations, at leaſt, a good deal of antimony. So that, notwithſtanding the pompous title, which they bear, they ought to be, and, I think, they are, juſtly exploded by all rational practitioners. Indeed, in an inflammatory fever, where there is an indication to attenuate, theſe reputed all-healing powders may do ſome ſervice; and then, to avoid being teized, a phyſician may yield to the ſolicitation of thoſe, who raiſe a clamour in their favour. But, to connive at the adminiſtring of them in a putrid fever, where the approaches of death keep pace with an increaſe of diſſolution in the humours, this ſurely muſt be unpardonable in any man, whoſe profeſ-

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ſion it is, if not always to relieve, at leaſt never to injure. SECT. VII.

SECT. VIII.

Of Antiſepticks.

SECT. VIII.

WHEN a putrefactive ferment is raiſed in a living body, it muſt not be ſuppoſed, that the humours are all at once reſolved into a mere putrid ichor. No one could ſurvive a change of ſuch general corruption. What is meant, and what appearances juſtify, is, that, in a putrid fever, the humours make ſome advances towards this change; and that, in every ſucceeding advance, the infection is propagated from the parts, which are already tainted, to thoſe which are as yet, in ſome meaſure, ſound. It is in this progreſſive manner, that corruption ſpreads every where. So that, though we ſhould expel what

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SECT. VIII. is entirely resolved by putrefaction, still the ferment must continue; and for this reason, that the infection adheres to parts, which, as long as they remain any way sound, cannot be fitted for a passage through any of the emunctories. We may readily conceive, then, that, to cure a putrid fever, it is not enough to make use of evacuations alone; and that, effectually to remove the cause, we should give such medicines, as are qualified to counteract the force of the remaining infection. We call these medicines by the name of antisepticks; and they are of three sorts: mineral acids, which increase the firmness of the fluids and solids, and render the prevailing alkali neutral: vegetable astringents, which brace up the fibres, and help to keep the constituent globules of the blood in a proper degree of cohesion: and vegetable acids, which saturate, indeed, but

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do not ſtrengthen. As to the ſub- SECT. VIII.
ſtances, which cannot be reduced to either of theſe claſſes, and which are found, nevertheleſs, to be correctors of putrefaction, I am apt to think that their antiſeptick quality, in the human body at leaſt, is owing to the power, which they have, to enliven the ſpirits, and, at the ſame time, to promote ſome evacuation. What makes me entertain this opinion is, that muſk and camphire, which are reckoned antiſepticks, ceaſe to be ſo, when they do not raiſe the pulſe; and bring on a gentle perſpiration.

SECT. IX.

Of Bliſters.

HITHERTO, I have obſerv- SECT. IX.
ed, that there are but two ways to reſtrain the ferment of a putrid fever. The one is to cleanſe;

SECT. XI. and the other is to ſtrengthen. I have obſerved too, that to ſucceed in both, no medicines ſhould be given, as evacuants, but ſuch as are of a gentle nature, and have little or no power to attenuate. Otherwiſe, you would deſtroy, in fulfilling the firſt indication, what you mean to eſtabliſh in fulfilling the ſecond. Now, if this remark be juſt, upon what principle can bliſters be deemed proper? Doctor Huxham condemns the promiſcuous uſe, that is made of them, upon this occaſion; but he owns, at the ſame time, that, if towards the decline, or at any other period of this fever, "the ſolids grow torpid, the circulation languid, the ſpirits effæte, and the ſick comatoſe," that, in this caſe, the application of bliſters is abſolutely neceſſary. I revere the memory of this great man; but, with deference to his authority, I think, that the very objections, which he makes to the practice of thoſe,

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SECT. IX.

who blifter early, when the fever runs high, may be made at leaft, with equal force, to his own. The reafon of his difapprobation is, that the acrid falts of the flies diffolve the blood, and confequently haften on its putrefaction. Very true: But pray, will they not produce the fame effects in the very cafe, wherein he approves of their application? fuch is the nature of a putrid fever, that as it advances to its full height, the fluids and folids become more refolved; and the confequence is, the above train of fymptoms. So that, whenever they appear, we need no other proof, that the diffolution of the blood, and its putrefaction of courfe, is then greater, than before. How, then, can it be fupported, that blifters will do a great deal of fervice, when the blood is greatly diffolved, and that, when it is lefs fo, they will do a great deal of harm? In anfwer to this, if the advo-

SECT. IX. cates of Doctor Huxham's opinion appeal to experience, they, who apply blisters early, may do the same; and, I believe, with greater justice. But the truth is, that reason and experience refute them both. Except, however, one case, that is, in the beginning, when the ferment is not yet great; nor the dissolution very manifest. Here, indeed, I own, that blisters may answer a salutary purpose, because they make an artificial drain, which rarely, if ever, dries up during the whole course of the fever. But even then, I give particular directions, that they should not be kept on longer, than ten, or twelve hours; because the advantage we expect from them, may be obtained within that space of time; and that to keep them on beyond it, would be to favour, what we ought to avoid, a further introduction of their saline particles.

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SECT. X.

Regimen.

I NEED only mention, what every one knows, that during the course of a putrid fever, no solid food should be given. Broth itself, though easily digested, is then highly improper, as it increases the alkalescent disposition of the humours. Nor is any drink fit, except that which is, in some degree, antiseptick. All wines are of this nature; those principally, which are tartish, and subastringent. Thus, in an obstinate diarrhæa, which frequently attends this fever, claret-whey is an excellent drink; and in the opposite case, hock-whey deserves a preference, as being less binding. But, when both are counterindicated, by an extraordinary heat, or an in- SECT. X.

SECT. X. creafe of raving, fome light acidulated drink fhould be fubftituted in their place, and taken in great plenty. For though the matter to be wafhed off is different; yet the neceffity of dilution is here the fame, as in an inflammatory fever; fince corrupted humours, like coagulated lymph, can never be fitted for any purpofe in the animal œconomy; and fhould therefore be expelled. Towards the decline of the fever, when the hurry fubfides, and the patient ceafes to have a loathing againft food, he fhould then be fupported with fome fort of nourifhment; not animal, for the reafons already given againft the ufe of broth; but that which is of the vegetable kind. Gruel, with wine, fugar, and lemon juice; panado, with the fame ingredients; or, what fome people like very much, flummery, or bread and butter-milk, are, either of them, very proper for a few days: and when it

it is thought fit to make a change, there should be care taken, for some time longer, to correct the alkalescent quality of animal food, which may be done by the addition of some vegetable acid. SECT. X.

SECT. XI.

Application of the foregoing principles.

THAT the points, of which I have spoken in general, may be drawn nearer to practice, I will suppose a patient, the moment he finds himself indisposed, to be visited by a physician. I will suppose too, what is very common, that the first complaints are so vague and unsettled, as not to characterize any particular fever. What then is to be prescribed? I follow the very method, which I have recommended in the beginning of an inflammatory fever. It cannot, under SECT. XI.

SECT. XI. the reſtrictions already mentioned, be prejudicial in any caſe. And if the faint workings, which are now perceived, be the forerunners of a putrid fever, an early vomit, ſucceeded at night by a gentle perſpiration, and, in the morning, by laxative ſtools, may go a great way to prevent it. I take this to be very true, when applied to thoſe, who are naturally of a ſound vigorous frame, and who, therefore, ſeldom, or never, get a putrid fever, but from contagion. In ſuch people, experience ſhows, that before the infection be deeply rooted, ſo as to confirm a fever, it may be expelled by timely evacuations. And as for thoſe, who are of a bad habit of body, who have an acrimony in their humours, and who therefore carry about them the ſeeds of a putrid fever, they, too, may receive benefit from the ſame practice. And though it ſhould not ſucceed, as a preventive in either, ſtill it cannot but

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be of ſervice to both, as it helps, in a great meaſure, to lighten their burden. SECT. XI.

SECT. XII.

The ſame ſubject continued.

BUT the following day, ſuppoſe the fever to continue, how are we to diſtinguiſh it? Appearances, indeed, may direct ſomewhat. A good deal may be learned from the conſtitution of the air, and that of the patient. But ſtill there can be no certainty. For it is poſſible, that, in the midſt of contagion, a fever, no way putrid, may be produced by a variety of other cauſes: and, on the other hand, where we judge, from many circumſtances, that the fever is ſimply putrid, it is very poſſible, that it may be one of quite another kind; or, at leaſt, that there may be a complication. SECT. XII.

SECT. XII. plication. So that, to arrive, in this case, at a certain point of knowledge, there is no other way, than to examine the blood. I order the small quantity, which is drawn for trial, to be kept in a safe place; and as soon as I discover, that it is free from any size, and of a loose texture, I enter a protest against all alkaline salts, and alkaline spirits; against all mercurials and antimonials; and, indeed, against every thing, that has a strong power to act, as an attenuant; but none, as an antiseptick. Not that I think it proper, whilst the complaint is slight, and yet in its infancy, to give the strongest of antisepticks, such as the bark, and mineral acids. Far from it. These remedies, I apprehend, would suppress the ferment at a time, when it ought, perhaps, to be raised; or, at least, suffered to work on: and thus, instead of assisting nature in bringing on a depuration, they would frustrate her

SECT. XII.

her efforts, and concentrate the diſeaſe. To avoid this error, which, I am ſure, is committed often, I preſcribe the following mixture.

R. Camphoræ ſcrup. j. tere cum paucis amygdalis; & poſtea gradatim affunde aquæ menth. ſimp. unc. ſeptem; colat adde ſpiritus mindereri unc. ii. mixt. cap. cochlearia duo ampla ſecundâ, vel, ſaltem, tertiâ quâque horâ.

The obſtructions, which are formed in a putrid fever are ſoon reſolved, when the ferment runs high; becauſe the humours muſt be then broken, and fitted, conſequently, either to be abſorbed, or to pervade the capillary veſſels, in which they had been impacted. But when the fever is low, as in the beginning it uſually is, theſe obſtructions often continue refractory; inſomuch, that, to remove them, ſuch

antiſepticks

SECT. XII. antiseptics should be used, as are gently aperitive. The above mixture is of this kind, and so are vegetable acids, and a little nitre, or sal polychrest, added to a few papers of rhubarb. For which reason, I think it sufficient, as long as the fever remains within moderate bounds, to proportion the dose of these medicines only.

SECT. XIII.

Continued.

SECT. XIII. IT seldom happens, however, that a putrid fever is so inconsiderable, as to require no other treatment. Suppose then the ferment to run high, and that the symptoms are of such a kind, as to justify our apprehension of either present or future danger: In either case, I change the foregoing prescription, and substitute this.

R. Cort.

R. Cort. peruv. in pulverem triti unc. unam. Coque in aquæ fontanæ unc. quatuordecem ad unc. decem. Colaturæ adde elixir vitrioli acidi q. s. ut grata concilietur aciditas. M. cap. cochlearia duo ampla ſecundâ quâque horâ. SECT. XIII.

As an antiſeptick, this mixture is certainly ſovereign, though, as an aſtringent, it may poſſibly check the natural diſcharges, and, in that proportion, hinder a thorough deſpumation. There is, indeed, no advantage, without a kindred evil; but here we have a remedy; that is, to have recourſe to ſome rhubarb, and ſal polychreſt, and to proportion the doſe of them, ſo as that, every four-and-twenty hours, the bowels may be kept ſufficiently free. But, in no caſe ſhould the *ne quid nimis* be more attended to, than here: ſince it would be no leſs dangerous to have too many ſtools, than none

SECT. XIII. none at all. And therefore, if a colliquative diarrhæa ſhould come on, and not yield to the binding quality of the bark and the elixir of vitriol, we ought immediately to call in the aſſiſtance of other aſtringent remedies. The beſt I know of is claret-whey, with cinnamon, and ſome papers of toaſted rhubarb, nutmeg, and alum. I never uſe any other means, unleſs there be a violent hæmorrhage at the ſame time; and then my laſt reſource is, any common drink, acidulated with the weak ſpirit of vitriol. Some take opiates to be very uſeful, not upon theſe occaſions only, but where there is any ſort of convulſion. But, I confeſs, I cannot bring myſelf to entertain ſuch an opinion of them. They certainly expand the humours, and relax the ſolids; and, on this account, I think them rather prejudicial in a raging putrid fever, where the expanſion and relaxation are already too

too confiderable. As to the nervous twitchings, which never appear until towards the height, or decline, of the fever, and which are then the effects of a prevailing alkalefcence, they are beft removed by a continuance of the foregoing antifepticks, and by the addition of a mufk julep; which has thefe other good qualities ftill to recommend it, that it raifes the pulfe, and promotes a gentle perfpiration; confequences very defirable at this time. I fhall conclude this fection with the hiftory of a cafe, fingular indeed, but literally true. SECT. XIII.

Mary Donelly, a well-made, young woman, who had been flightly difordered by her hufband, was advifed to take, every night, two grains of calomel, made into a pill; and, every fecond night, to wafh it down with a little purgative mixture, compofed of manna, falts and common water. This

courfe

SECT. XIII.

course she followed for some time, without perceiving any inconvenience from it; not even so much as an increase of any evacuation. But scarce had she taken the tenth pill, with the usual complement of the mixture, when she began to feel a swelling in her stomach, attended with a disagreeable sensation of heat, and an extraordinary sickness all over. That night she spent restless; and the day after, her skin became red. In this painful situation, she continued for fifty hours, taking nothing but whey, and that too but sparingly. On the evening of the third day, her hands became brown, and the following day, her skin was all black, insomuch, that a stranger to her, and to the cause of the appearance, would judge her to be one of those, who are naturally of that colour. There was this aggravating circumstance besides, that though her eyes were open, her tongue ductile, and her joints no way

inflexible;

inflexible; yet ſhe could not ſpeak, nor ſee, nor ſtand. Such was her condition, when ſhe was brought to me, while I was attending at the Inn's-quay infirmary. It was not difficult to know, that the whole cuticle was actually in a gangrenous ſtate. The conſideration of what had preceded, joined to that of the preſent appearance, was enough to baniſh all doubt. But whether or no any of the interiour parts were mortified at the ſame time, I ſhall not determine. The breathing, indeed, was not much affected; but the pulſe was ſo low, that I could hardly diſcern its motion. The novelty of the complaint ſurprized me much; and I reſolved to watch its progreſs. I ſaw her the day after; and I was glad to hear, that ſhe had received ſome benefit from the mixture, which I had ordered the day before, and which was compoſed of ſome cordial confection, camphire, and the ſpirit of mindere- SECT. XIII.

Sect. XIII. rus. At this time, her pulſe was raiſed a little: ſhe was able to ſee me, and to articulate ſomething, though not diſtinctly. I began then to hope, that a continuance of theſe remedies would make the cuticle fall off in dry ſcales, and that the impending danger would be warded off eaſily. But I was miſtaken. In two days after, the epidermis burſt in different places; and from the crevices there iſſued an ichorous ſubſtance, corroſive to an high degree, and extremely fetid. Still, however, the breathing was rather favourable, and continued ſo to the laſt. But all the other ſymptoms were of the worſt kind, and ſuch as attend the worſt ſort of putrid fevers; a raving; a conſtant watchfulneſs; the hands trembling; the pulſe quick and fluttering; a conſiderable degree of heat; an inexpreſſible agitation; the ſtools thin and frequent, involuntary and bloody. Nor was this all; that which

cauſed

caufed the greateft alarm, was an ooz- ing of blood, not from the vagina only; but from the ears, the eyes, the nofe, the gums, and even from the back of the legs. The blood clotting upon the furface of the fkin, and yet pene- trated by the fanious humour, that leaked from the ulcers underneath, ren- dered her an object, offenfive enough to the fight, and ftill more fo, to the fmell. The indication was clear, and had been fo all along. It was to pre- vent a further diffolution of the blood, and a further growth of the mortifica- tion. I ordered, therefore, what I have already mentioned, that a ftrong de- coction of bark, and every drink fhe took, fhould be acidulated with the elixir of vitriol; that every four-and- twenty hours fhe fhould take about ten ounces of the firft, and four or five quarts of the laft; that now and then fhe fhould drink a teacup-full of ftrong claret whey; and that every third hour

SECT. XIII.

Sect. XIII. ſhe ſhould take a paper of powders, compoſed of toaſted rhubarb, nutmeg, and alum. This method anſwered my expectation, as, in ſome time after, I found, that not only the diarrhæa, but alſo the hæmorrhages were, in a great meaſure, reſtrained. But ſtill the ſkin continued in a moſt ſhocking figure, ulcerated all over, and ſo intolerably fetid, that even the patient's mother, who was the only nurſe-keeper, could not, without fainting, remain long cloſe to her. I directed then, that, beſides a continuance of the above medicines, ſome vinegar ſhould be often burnt in the garret, wherein the patient lay; that as it was the month of July, when no danger could be apprehended from the coldneſs of the weather, the window ſhould be kept half open, at leaſt, during the courſe of the day; that an ounce of cerate ſhould be beat up with half a pint of the decoction of bark; and that with this the moſt angry parts of

of the ſkin ſhould be moiſtened once or twice a day. The conſequence was, that the ulcers dried gradually, and that a ſcaly cruſt was formed all over the body. As this fell off, a new cuticle appeared, and I fancied the diſorder would ſoon terminate. But, to my great ſurpriſe, this too became ulcerous; and after being treated, and removed in the ſame manner, as the firſt, it was ſucceeded by a third, which gave way to a fourth; and this, in its turn, to a fifth. So that it was only the ſixth growth, which eſcaped the fate of all the reſt. And even under this, ſeveral large boils were formed, which ſeemed to be of a bad kind; but which ſoon diſappeared, without leaving any diſagreeable mark behind them, though they had all been opened, ſome by nature, and others by the lancet. At laſt, after ſeven weeks confinement, this often-flayed woman began to crawl, ſtripped of her nails, and even of all

SECT. XIII.

SECT. XIII. her hair. I made her persist for five weeks longer in the use of the bark, and of antiseptick food. She is now sound, at least in appearance. The *lumen purpureum juventæ* is indeed gone, and, I believe, for ever. But in no other respect is she disfigured.

CHAP.

CHAPTER III.

SECT. I.

Compound Fever.

IT is certainly a very eſſential point in the practice of phyſic, to diſtinguiſh, even in general, the real putrid from the real inflammatory fever. But this is not enough. It is ſtill neceſſary to trace the boundaries of each, and to know clearly when they enter into an alliance. Indeed, as long as each of them ſtands uniform, and diſtinguiſhed, they are as oppoſite, as any two things can poſſibly be; the one being founded on the ſizineſs, the other on the diſſolution of the humours. And therefore it is evident, that the mode of SECT. I.

SECT. I. treating the one should differ, essentially, from that of treating the other. But, opposite as they are in their own nature, we find them often united in the same person; and the result of their union is what I call a compound fever. I am not fond of multiplying names. On the contrary, I wish we had in physick a smaller number. There is, however, room to introduce here a new one. The surface of the blood, after it settles, for a while, in a teacup, is often covered with a thin pellicle, which resists the pressure of the fingers but slightly; and which is of various shades, from a faint olive colour, down to an obscure green. Where we make this discovery, shall we say, that there is nothing more than a simple putrid fever? If we do, we shall certainly convey a wrong idea. For, in a fever, that is merely putrid, no pellicle, or size, is ever seen: and, besides, the blood concretes here more firmly,

firmly, than it ever does in a real putrid fever. Neither is the opinion, that the diſorder is then truly inflammatory, more accurate. Firſt, be-becauſe the ſize, which characterizes an inflammatory fever, is tough, white, and thick: and ſecondly, becauſe the blood, which lyes under the pellicle, is not quite ſo denſe, as that which is drawn in a fever of the bare inflammatory kind. When a thick inflammatory cruſt begins to putrefy, you may obſerve a gradual decreaſe of its conſiſtency and toughneſs; and that, towards the end, it degenerates into a thin, brittle pellicle. You may obſerve too, that its colour changes, in the ſame gradual proportion, until it becomes quite green, and runs off at laſt *per deliquium*. Hence, I conclude, that in any feveriſh caſe, wherein a ſize appears modified in this manner, the fever itſelf is compounded, partly, of the putrid, and partly, of the in-

inflammatory;

SECT. I. flammatory; but that the first prevails, when the size is greenish, thin, and brittle; and that, when it is otherwise, the second is predominant.

SECT. II.

The cause of a compound Fever.

SECT. II. LITTLE more needs be said concerning the efficient cause of this fever, than that it is a combination of the efficient ones, which I have already mentioned. The only difficulty is, to conceive how causes, so diametrically opposite, as a coagulation of the lymph, on one side, and a putrefactive ferment of the humours, on the other, can be united at the same time, and operate so, as to produce a joint effect. But that which happens in other cases, may happen here likewise. In the infinite variety of

SECT. II.

of natural combinations, and even in those of art, we perceive things, the moſt remote imaginable from each other, united in the ſame object. We perceive too, that they concur mutually in producing an effect, different from that which each of them would produce ſeparately, and yet participating of the nature of both. And as for the preſent caſe, let it be remembered, that an introduction of cold congeals the ſerum and blood, at the ſame time that the perſpirable matter, which is ſuppreſſed by this introduction, tends to diſſolve them. In reality, thoſe are moſt ſubject to this fever, who are moſt expoſed to the inclemency of the weather. Not but that other remote cauſes may concur. But it can anſwer no purpoſe to mention any more; ſince the appearance alone of the blood is ſufficient to ſhow, that the combination is not only poſſible, but actual.

SECT. III.

Symptoms.

SECT. III.

IT is with the Symptoms, as it is with the Fever itſelf, and its cauſe. They are of the mixed kind. So that we may obſerve, in general, that the compound fever does not come on ſo ſpeedily, as that which is inflammatory; nor quite ſo ſlowly, as that which is putrid. That, at the beginning, the interchanges of cold and heat are more manifeſt, and more frequent in this, than in any other continued fever. That in either head, or cheſt, and ſometimes in both, the patients feel an heavy pain; but that it is rarely ſo conſiderable, as to hinder them from complaining of a general laſſitude, and ſickneſs all over. That the ſtrength is not ſo exhauſted here, as it uſually is in caſes, which are merely

merely putrid; but that it is more ſo, than in thoſe, which are entirely inflammatory. That when a raving comes on, it holds a middle degree, between the extreme of ſtupidity, and a violent hurry of the ſpirits. That the heat is great, owing to the projectile force of the ſize, to the obſtructions which it creates, and to the inteſtine motion of the blood. That, in the beginning, the body is rather coſtive; but that towards the decline, a putrid diarrhœa often comes on. That the eruptions, which appear after an abundant perſpiration, are, generally, of two diſtinct kinds; the one miliary, and the other petechial. And, finally, that the ſweats, which are truly critical, in a ſimple inflammatory fever, are not always ſo in this. Not that they fail of giving ſome relief, eſpecially when they are neither forced, nor profuſe; but though they carry off the inflammatory ſize, ſtill the

SECT. III.

SECT. III. the putrefactive ferment may remain, and protract the fever yet further.

SECT. IV.

Prognofticks.

SECT. IV. WHEN the humours are a great while agitated, and not fufficiently refrefhed, it is natural, that their texture fhould be broken, and that they fhould affume an alkaline difpofition. This effect may be ftill increafed by a long-continued ufe of attenuating medicines. So that, though a putrid fever can never become inflammatory; yet an inflammatory fever may become putrid. At leaft, in a compound fever, where the fize is more or lefs putrid from the very beginning, a degeneration of this fort is very common. And, indeed, it is a good fign, when the change is perfect. Whereas, if only a part of the inflammatory fize be refolved

resolved by putrefaction, and that another part be rivetted in the capillary vessels of the brain, or lungs, or bowels, there is much to be apprehended; and the more so, because the dissolved state of the blood will not then permit the use of such attenuating medicines, as would, in other cases, prevent the fatal consequences of an inflammation. As to the other prognostics of this fever, they bear a close affinity to those, which have been mentioned already, and need not, therefore, be repeated here. SECT. IV.

SECT. V.

Cure.

IN all complicated disorders, it is very difficult to act with judgment, and the present case is, surely, an instance. On one side, the antiphlogistick treatment is indicated; because it is the SECT. V.

SECT. V. the only one, that is fit to attenuate the inflammatory size. But then we should remember, that it is, in a great measure, counterindicated by the putrefactive ferment, which is actually raised in the humours. On the other hand, this growing putrefaction would require the use of antiseptick remedies; but the inflammatory size absolutely forbids such of them, at least, as are of the astringent kind. What then is to be done? I think that, which we do in all other intricate cases; and which is, to obviate the greatest danger. Therefore, since the principal thing to be apprehended in the beginning is, lest the sizy matter should be accumulated in any internal part, so as to form obstructions, that might terminate in some irremediable disorder, the first indication should be to attenuate this size: and certainly, the second one should be to guard against the progress of the putrefactive ferment. In a word, I think,

think, that, to cure the compound fever, we should begin with the means, which we employ advantageously in the cure of what is simply inflammatory; and to end with those, which are found successful in the cure of what is merely putrid. But still there are certain restrictions, which it is necessary to know, and which, therefore, shall be examined in the following sections. SECT. V.

SECT. VI.

Of Bleeding.

IN a real inflammatory fever, I have shown, that bleeding is our principal resource; and that, in this point, we should be directed, not so much by the motion of the pulse, as by other alarming symptoms. I have shown too, that in a real putrid fever, the lancet should be spared, and that no more blood should be drawn, than what is SECT. VI.

SECT. VI. barely sufficient to enable us to form a diagnostick. Here, then, as we find a combination of both these fevers, it is reasonable to imagine (and experience does not evince the contrary) that we should bleed, not indeed so copiously as in the first, but a good deal more, than in the last. What I take to be the rule is, that the vein should not be kept open until a weakness comes on. Otherwise, you might irretrievably sink the spirits of the patient, and hurry on the putrefactive ferment; but as long as he finds benefit from it, a moderate bleeding should be repeated; otherwise, the sizy matter might be irrevocably fixed.

SECT. VII.

Concerning Blisters.

SECT. VII. IT has been already established, first, that in an inflammatory fever, blisters are of service, because they attenuate

tenuate the ſizy matter, and create an artificial drain; and ſecondly, that in an high, putrid fever, they are dangerous, not becauſe they make a drain, which, in itſelf, is rather uſeful; but becauſe they diſſolve the humours; and this at a time, when a further diſſolution is the only thing, that ſhould be guarded againſt. Now, as in the beginning of a compound fever, the humours are rather ſizy, and that, towards the end, they become diſſolved, I think that in the firſt ſtage, bliſters are clearly indicated; but that to apply them in the laſt, is ſuch a practice, as cannot be warranted by experience; nor founded upon any rational principle. SECT. VII.

SECT. VIII.

Of other evacuating Medicines.

WHAT has been ſaid with regard to the timing of Bliſters, may be applied as juſtly to the other eva- SECT. VIII.

SECT. VIII. cuating medicines. Such of them, as have an attenuating quality, are indicated in the beginning of this fever; and the neceſſity for them is founded upon the principle, on which they are given in a fever, that is ſimply inflammatory. Except, however, the ſtrength, and doſe, and continuance, which, in the preſent complicated caſe, ſhould be varied, according to the appearance of the ſize, and the ſtate of the blood, which it covers. But towards the latter end, when the fever aſſumes a real putrid character, theſe medicines ſhould give way to thoſe, which operate in quite another manner; and which, on this account, are placed in the claſs of bracing antiſepticks. Not that even theſe ſhould be given here ſo copiouſly, nor be ſo ſtrong, as in that which has been all along a raging putrid fever. But in a moderate quantity, there is certainly a call for them at this time, and not ſooner: ſince it would be no

leſs

lefs dangerous a blunder to give the bark, for inftance, in the *beginning* of a compound fever, than to give ftrong antimonials, or Doctor James's powders at the *end*. SECT. VIII.

SECT. IX.

Application of the foregoing principles.

AT the very onfet of this fever, fuppofe the fame caution, which I have mentioned, as a preventive in all other fevers, is ufed: and that, after having failed of fuccefs, the firft night, the phyfician fets about making a right diftinction the day after. Since the fureft ftandard we have is the appearance of the blood, I order a fmall quantity to be drawn for trial. As foon as this fettles, nothing more than a fuperficial view is requifite, to know, if it be any way inflammatory. But to diftinguifh the SECT. IX.

SECT. IX. real inflammatory size, from that, which is, in the least, putrid, a close attention should be paid to its colour, and the resistance, which it makes to the pressure of the fingers. No sooner am I satisfied of its being a compound fever, than I prescribe the mixture, which I have directed for the cure of an inflammatory fever, and which is composed of camphire, the spirit of mindererus, and two grains of tartar emetic. In the mean time, I order some gentle, opening medicine, and plenty of light vinegar-whey. The next morning, if the fever still continues, I make no alteration, but recommend another bleeding: and on the fourth day, I defer no longer the application of blisters, provided I discover, that the fever is likely to increase, or to be attended with any grievous symptom. But as to a third bleeding, on or before the fifth day, I am guided, not so much by the state

ſtate, in which I find the patient, as by that in which he found himſelf, after the laſt bleeding. If he got no eaſe at all, I fear another bleeding would injure more, by hurrying on the putrefactive ferment, than it would relieve, by leſſening the force of the ſizy matter; and therefore I refrain from it. But, in caſe I learn that the laſt bleeding was of ſervice, I think it neceſſary to repeat it here; and the reaſon is the very oppoſite to that, which would have deterred me in the other caſe. At any rate, I adviſe the patient ſtill to perſevere in the uſe of opening powders, and of the above mixture; and to drink freely of light vinegar-whey, or, in its place, of any common drink, made agreeably tartiſh with lemon juice. On the ſixth day, if it appears that the fever is at a ſtand, and that things go on in a promiſing manner, I think it would be improper to make any

SECT. IX.

SECT. IX. change. But if, on the other hand, I perceive, that, in spite of all that has been done, the fever increases, and yet that no extraordinary mark of putrefaction appears, I order another blister; and whether I bleed, or no, depends upon the reasons, which weighed with me the day before. Thus far I go, to prevent the accumulation of the sizy matter; but I go no further. In the next place, I take care to guard against the corruption of the humours; and as soon as I perceive, that the stools become either involuntary, or thin, or fetid; that the patient grows torpid; that, instead of giving a lasting relief, the sweats help to weaken; and, above all, that, far from healing soon, as they always do in real inflammatory cases, the blisters discharge a thin, ichorous substance; in this case, I change my course, and, in the place of attenuating medicines, which un-

till

till then I had continued, I ſubſtitute those, which are rather aſtringent. However, that the reſolution of the ſizy matter, if any ſtill remains, may not be prevented, I omit the mineral acids, which are, of all aſtringents, the moſt powerful. Nor do I ever make uſe of them at any ſubſequent period of this fever, unleſs an extraordinary reſolution of the blood, and a flaccidity of the fibres ſhould require it. In general, I content myſelf with adding to a decoction of the bark the ſpirit of mindererus, which is well known to act, not only as a diaphoretick, but even as an antiſeptick. This is my receipt.

SECT. IX.

R. Corticis peruv. Pulv. unc : i. coque in aquæ font. unc. xii ad unc. viii. Colat. adde ſpirit. Mindereri unc. ii. ſyrup. croci ſemiunc. M. cap. cochlearia duo amp. ſecundâ quâque horâ.

WHILST

Sect. IX.

Whilst the patient continues under the influence of this medicine, I attend closely to the state of his bowels. If the bark binds them, which is often the case, recourse should be had to opening powders. But if, on the contrary, a putrid diarrhœa comes on, then I follow, in every respect, the directions, which I have given towards the close of a real putrid fever. Particular attention should be given, when there appears a necessity for food, that it should consist of the acescent kind. For, though this remark may seem of little moment, I am sure, that very great evils often arise from a neglect of it.

Some time ago a man of about thirty years of age, was seized with a fever. He was of a slender and delicate frame. On the ninth day I was requested to pay him a visit. Before I examined him, I was informed, that, previous to his confinement, he had been only

SECT. IX.

only a ſhort time complaining; that in the beginning he had felt ſeveral interchanges of cold and heat; that he had been blooded three times; that he had been, in ſome degree, reliev-ed by the firſt and ſecond bleeding; but that he had been much oppreſſed by the third; that all along the craſſamentum had been covered with an olive coloured pellicle; that he had taken ſeveral doſes of Doctor James's powders; and that, every day, he was growing worſe. From this account it was natural to deduce, that how compound ſoever the fever had been at firſt, it was, at this time, become, for the moſt part, if not altogether, putrid. Nor was the contrary denoted by the ſymptoms I obſerved; and of which the moſt deciſive were, a bloated, gloomy countenance, a ſuffuſion of the eyes, a foulneſs of the tongue, petechial ſpots, and a painful tenſion of the abdomen.

SECT. IX.

I judged the time, proper for the application of blisters, to have passed; and, therefore, I only ordered a decoction of the bark with the spirit of mindererus; some wine-whey with nitre in it; and a few opening powders. On the eleventh night the patient slept, and sweated a good deal; and, on the following day, his pulse was more full and easy. These circumstances, if the fever had been all along of a simple nature, would have inclined me to believe, that there was now a favourable crisis. But, as I had often observed, that, notwithstanding an apparent amendment on the eleventh day, a compound fever is still apt to continue, I apprehended here the same misfortune, and the event showed, I was not mistaken. For, during the twelfth night, the patient was very hot, restless, and delirious; and, on the thirteenth day, I found him much worse. However,

I did

SECT. IX.

I did not, in the leaſt, deſpair, as he had a gentle diarrhœa, which, when duly managed, I take to be no leſs ſalutary in a putrid fever, than a copious ſweat in an inflammatory one. I omitted then the ſpirit of minderetus, and ſubſtituted the elixir of vitriol. Beſides, as the patient had, the following day, a ſubſultus tendinum, together with frequent ſpaſms both in his ſhoulders and countenance, I ordered an ounce of muſk Julep to be given with every ſecond doſe of the foregoing mixture. At this time there was no need of opening powders. On the contrary, I was obliged, in order to moderate the diarrhœa, to preſcribe a few papers of toaſted rhubarb, nutmeg, and alum; and claret-whey for common drink. I perſevered in this courſe, till the eighteenth day, when the diſorder ſeemed to have taken a favourable turn.

SECT. IX.

ABOUT the twenty second day, the fever was entirely removed; and, after having pointed out an antiseptick regimen, with a positive injunction, that it should be strictly followed, for five, or six days, I thought it no longer necessary to continue my attendance. But scarce had I taken my leave, when the patient was prevailed on to depart from all my directions. Broth, jelly, and chicken were given in abundance. By which means the fever was renewed; and, as if mischief enough had not been done, a large blister was applied to the back. The consequence was, that, on the fourth day after I had quitted him, and before the blister was taken off, the patient died.

CHAP.

CHAPTER IV.

SECT. I.

An ague, or intermittent fever.

WHEN we ſee a ſhivering, SECT. I. ſucceeded by heat, and this, in its turn, by a copious perſpiration, we may be inclined to think, that the fever, which exiſts at the ſame time, is of an aguiſh, or intermittent kind. But yet there can be no more than a ſurmiſe. For theſe ſigns are often obſerved in the beginning of the fevers, which, on account of their uninterrupted progreſs, are ranked under the denomination of *continued:* and, therefore, to form a diſtinct idea, we muſt ſuſpend our judgment for a while, and attend to other conſiderations.

What

SECT. I. What seems to me to be decisive, is, that by sweating the fever should be entirely carried off; and that, after a respite of some hours, it should return, attended with the above symptoms. I take this to be the true characteristick of agues, or intermittent fevers in general. And as to the mark, by which they are distinguished, one from the other, we find it in the difference of their periodical returns. Hence, the distinguishing names of quotidian, tertian, quartan, &c. So that we may define an ague, or intermittent fever, to be that, which comes and goes at stated times; and whose paroxysms are divided by lucid intervals.

SECT. II.

The efficient cause of an Ague.

SECT. II. WHEN Agues are either general, or confined to any particular place, it is very remarkable, that

that they attack thoſe only, who are of a relaxed habit of body, or who live upon improper food; or who digeſt but badly, whatever they take for nouriſhment. Beſides, daily experience ſhows, that the cure of an ague conſiſts in cleanſing the ſtomach, and inteſtines; and in ſtrengthening them ſo, as to make them prepare a good chyle. Moreover, if immediately after any one paroxyſm of an Ague is ended, you give repeated doſes of ſuch medicines, as conſtringe the orifices of the lacteal veſſels, it is a well known fact, that you may prevent another from being formed. And when an Ague is ſtopped ſuddenly in this manner, it is no leſs certain, that you may bring it on again, by the means of emollient clyſters, or ſuch purges, as are of a weakening, relaxing nature. Now, ſurely, as thoſe obſervations are founded on truth, and cannot therefore be diſputed; we may, without any ap-

SECT. II.

SECT. II. prehension of error, draw these inferences. First, that the efficient, or material cause of an Ague originates from the stomach, and intestines. Secondly, that it is neither putrid, nor endowed with any quality, by which it can coagulate the lymph; otherwise, the subsequent fever would be of the continued, and not of the intermittent kind. Thirdly, that it can be nothing else, than a viscid, ropy chyle, the result of imperfect digestion. Fourthly, that this slimy substance is taken up by the lacteal tubes; and that, instead of being, like a good chyle, assimilated to the rest of the humours, or immediately expelled through any of the common outlets, it sticks in the capillary vessels. And fifthly, that it continues to be accumulated there, until an obstruction is formed, sufficient to impede the freedom of circulation, to resist the action of the heart, and, of course, to occasion

SECT. II.

casion a feverish conflict. There is a saying, which implies that a fever cures itself; and here it is found literally true. For, as I shall show, by and by, the very shivering, and the rapid circulation, which comes on after, subdue the viscidity of the chyle, and force it off by the way of perspiration. But, as the fountain head is not, at the same time, cleared, we must expect, that when one paroxysm is ended, a foundation should be laid for another to succeed it. And, as to the difference of the periodical returns, I think, that, without seeking any distinct causes, we may justly ascribe it to the quantity and different viscidity of the chyle, which, in a given space of time, passes from the intestines into the vascular system. What confirms this point, beyond the possibility of a doubt, is, that a change of air and exercise, a change of diet and medicines, never fail to produce a variety

SECT. II. in the appearance of all agues; and this, in proportion to the change, which these very things produce in the nature of the chyle.

SECT. III.

Symptoms.

SECT. III. I HAVE said, that the paroxysms of an ague are the only symptoms, by which it is distinguished; and, I may add, that they are the only ones, which require a particular attention. Let us first consider the cold fit. The symptoms, which precede this, and which mark a languid circulation, are, a low pulse, an anxiety, and lassitude. These are succeeded by obtuse pains, and when the viscid chyle is accumulated to such a degree, as almost to create a general stagnation, the patient begins to have a sensation of cold, and,

at

SECT. III.

at laſt, the whole body ſhivers. In this ſtate, it is evident that the ſolids are braced, becauſe they are contracted; and, conſequently, that they muſt act with great force upon their contents. Beſides, the ſhivering itſelf, as it agitates the humours, contributes much to break their viſcid coheſion. The heart too, as it cannot, on account of the reſiſtance it meets with, empty itſelf ſufficiently, is forced to reiterate its contractions more quickly, and, relatively, with greater power. So that being preſſed and turned on all ſides, the obſtructing matter is ſubdued by degrees, and fitted to paſs from the arterial to the venal veſſels. Here, as the cold fit declines, the hot fit begins, and the ſymptoms are ſuch, as attend a rapid circulation. The conſequence is, that the attenuation, which was begun, during the cold fit, is carried on further, during the hot. For the exertion of the muſcular fibres,

SECT. III. which had done the work before, continues ſtill; and beſides, there is now a greater colliſion. In this ſtate of hurry, and agitation, the patient remains, until the morbid chyle is ſubtilized ſo, as to be forced through the pores of the ſkin. But no ſooner does this happen, than the ſymptoms begin to abate, the urine depoſes a ſediment, and the whole ſkin becomes covered with a profuſe ſweat. As to the quantity, and continuance, of this critical diſcharge, they bear, in general, a juſt proportion to the length, and violence, of the preceding fits; juſt as theſe do, to the quantity, and viſcidity of the chyle, which cauſes them.

SECT. IV.

Prognosticks.

IN the cold fit of an ague, the blood may recoil ſo much, and the other reſiſtances may be ſo great, as entirely to overpower the action of the heart. In the hot fit too, the ſhocks may be ſo rude, and the circulation ſo rapid, as to burſt the tender veſſels of the brain, or lungs. But how poſſible ſoever theſe events may be, it muſt be owned, that they happen but ſeldom. In this country, at leaſt, no people die ſuddenly during the courſe of ſimple paroxyſms. But, we have many inſtances to ſhow, that agues are fatal enough in their conſequences. Nor is it difficult to conceive, why they ſhould. For, whilſt they prevail, it is obſerveable; firſt, that the blood is poor, and watery, becauſe a due tone SECT. IV.

SECT. IV. of the fibres, and a well-digested chyle, which are conditions absolutely necessary to make good blood, are then wanting. Secondly, that besides the obstructions, which cause the fever, and which are removed by the force of the supervening paroxysms, others of a more obstinate nature are formed out of the road of circulation; particularly, in those places, where the vessels are weak, and little assisted by the action of the heart; and where the chyle, that passes through them, is more crude, and viscid. I mean the lacteal vessels of the abdomen, and those that go to the liver. Hence it is, that when agues are suffered to run out to a great length, or unskilfully treated, they usually terminate in a jaundice, or dropsy, and, sometimes, in both. On the other hand, when they are treated properly, experience shows, that, far from being dangerous, even in their effects, they become a

cure

cure for many an inveterate diſorder. The reaſon will appear clear, if we conſider well the changes, which the paroxyſms of an ague induce in the powers of the body. SECT. IV.

SECT. V.

Cure of the Paroxyſms.

SOME think it neceſſary, not only in the cold fit of an ague to give ſpirituous liquors; but in the hot one to order bleeding; both which I take to be equally improper. Indeed, if the influence of heating medicines were to ceaſe with the cold fit, and not extend to the hot, they might, perhaps, be of ſervice in driving forward the ſtagnant humours, which cauſe the ſhivering. But ſuch a ſpeedy diſſipation cannot be expected. On the contrary, we know, that the effects of ſpices, of tinctures, and high cordials, con- SECT. V.

SECT. V. continue a great while, and increase the heat of the succeeding fit. To remedy this adventitious evil, one may be forced to have recourse to the lancet. But in no other case, should it be thought of; because, by bleeding, we weaken the stomach, and its digestive powers, and make way for the reception of crude, indigested humours, which it should be our business to evacuate. Nor is the use of very cooling medicines much better indicated. For, as I have noticed before, the cold and hot fits of an ague are the only means, by which the morbid chyle is fitted for expulsion; and, therefore, to cool too much in one case, is not less improper, than to heat too much in the other. By both, nature is often disturbed in her operations; and, on this account, I think it sufficient, in the cold fit, to give, at most, a little whitewine whey; and in the hot fit to give twomilk whey only,

only, or ſome other thin diluting drink. The neceſſity of dilution is obvious. For the more the patient drinks, the greater the diſcharge by urine and perſpiration will be: And the more copious theſe diſcharges are, the more the criſis will be perfect. SECT. V.

SECT. VI.

How to prevent the next Paroxyſm.

AS ſoon as the ſweat ceaſes, it is uſual with thoſe who are noted for curing the ague ſuddenly, to adminiſter medicines powerful enough to conſtringe the orifices of the lacteal veſſels. Such are large quantities of alum, and bark, mixed with a ſtrong infuſion of chamomile, centaury and wormwood. By giving in different draughts about three pints of this mixture, I have known people to ſucceed in preventing the return of any paroxyſm. But I know SECT. VI.

SECT. VI.

know too, that the greateſt part of the patients, who did not relapſe, have had no reaſon to rejoice at their ſucceſs. For, in the place of regular fits, they have felt all the evil conſequences of an ague. Theſe unhappy ſufferers aſcribe their misfortune to the uſe of the bark; and, to prejudice their friends againſt it, they tell them, they have it ſtill lodged in their bones. But the real cauſe lies here; that the viſcid chyle had formed obſtructions in different parts of the vaſcular ſyſtem; and that theſe very aſtringent remedies, inſtead of reſolving ſuch obſtructions, muſt render them ſtill more obſtinate. Beſides, as this haſty cure prevents the return of any paroxyſm, it takes away the only means, which nature can employ to free the body from a groſs and troubleſome incumbrance. If there be any who receive no injury from this mode of treatment, it is becauſe their neceſſities tie them down to hard labour;

bour; and that, in ſuch people, there is an exertion of the muſcular fibres, by which a viſcid chyle is acted upon almoſt in the ſame manner, as in the cold, or hot fit of an ague. Under ſuch circumſtances, it may, perhaps, be ſafe to attempt a ſudden cure; but to adopt the ſame mode, with regard to thoſe, who are unable, or unwilling, to labour, is to baniſh one diſorder at the expence of bringing on another, perhaps, of a more grievous nature. SECT. VI.

SECT. VII.

Of a more effectual method of Cure.

FROM what has been ſaid concerning the efficient cauſe of an Ague, it follows, I think, clearly, that whatever contributes to its cure, muſt be more or leſs fitted to invigorate the whole frame; and, in particular, to enable the ſtomach, and inteſtines, to perform SECT. VII.

SECT. VII. perform good digestion. With this view, a variety of medicines may be recommended, and among the rest, some of those, which are generally reckoned empirical. But, as the bark is, of all, the most sovereign strengthener, we give it here a distinguished preference. There are, however, some conditions necessary to make this, itself, operate as a specifick. Those which reason, and experience point out, are, first, to cleanse the stomach, and intestines; and secondly, to remove the obstructions of the abdomen and liver, if any such there be. In the first case, I order a few doses of Ipecacuanha, and one or two of rhubarb. I choose these rather than drastick remedies, because they answer the necessary purpose of evacuation; and that, instead of weakening, as more powerful evacuants are wont to do, they help, ultimately, to strengthen. In the second case, I order pills made of rhubarb, soap and steel. Not but mercu-

rial, and antimonial, preparations are much better deobſtruents. But then, they break down the craſis of the blood, which is already in too poor a ſtate; and thus, if they do not bring on an additional diſorder, at leaſt, they render the cure of the ague more difficult. After all, when we come to uſe the bark, it may happen, that if it be given ſeldom, and in a ſmall quantity, it may ſuffer the fever to run to a teizing, if not dangerous, length; and that if given often, and in a large doſe, it may conſtringe the fibres too much, and produce the evils I have mentioned in the foregoing ſection. To obviate theſe inconveniencies, I know but of one way. It is, to give a moderate doſe every ſecond, or third, or fourth hour, according to the diſtance of the paroxyſms from one another; and with each doſe to mix as much rhubarb, as may procure a ſtool at leaſt every twenty-four hours. More than this ſhould not be ſolicited. For, by

weakening

SECT. VII. weakening the digestive powers, too much purging would counteract the strengthening quality of any medicine. Hence, if the bark itself operates by stool, it ceases to be a specifick; insomuch that we are obliged, either to restrain its purgative quality, or to employ some other medicine in its place. But the same danger is not to be apprehended from keeping the body in the state I have directed. On the contrary, the stomach is then better able to digest whatever is taken in, either as food, or as medicine. And, as this is the only change we want to bring about, the patient ought to take care, in the mean time, not to live upon any food, but that which is easily digested: Such is stale, well-baked bread, fresh tender meat, and a certain quantity of red wine. On the same account, if he be not able to exercise between the paroxysms, he ought at least to make use of a flesh brush, and to breathe a pure air.

Nor

Nor ſhould he deſiſt from this courſe, when he finds himſelf cured. To prevent relapſes, which are more common in this diſorder, than in any other, it would be proper, for ſome time, after the paroxyſms are removed, to continue the ſame ſtrengthening medicines, and the ſame regimen as before. SECT. VII.

CHAPTER V.

SECT. I.

Of remitting Fevers.

SECT. I. IN a continued fever, there is no periodical aggravation of the symptoms: nor is there a fever during the time, which intervenes between the paroxysms of an ague. But in a remitting fever, we find, that the symptoms are violent at stated times; and that, when their violence is abated, a fever still continues. From this type, it appears to me, that a true remittent is not at all of a simple nature; but rather a compound of an ague,

SECT. I.

ague, on one ſide; and a continued fever on the other. In reality, the exacerbations of theſe fevers return at different periods, juſt as the paroxyſms do in different agues, and the intermediate fever has the very ſame marks, which diſtinguiſh continued fevers from one another. So that remitting fevers may be divided into a quotidian, a tertian, a quartan &c. But, with reſpect to the cure, theſe diſtinctions are of little moment. Nor do I, conſidering the nature of the continued fever, which is here an aſſociate, know of any uſeful diviſion to be made, but that of putrid, and inflammatory, remittents.

SECT. II.

The efficient cause of remitting fevers.

SECT. II.

THE only efficient cause, that I have assigned for intermittent fevers, is a viscidity of the chyle; and I have shown, that continued fevers are owing, one to a coagulation of the lymph; another to a putrefactive ferment in the blood; and another to a combination of both. Now, as remitting fevers are a compound of the intermitting and continued, it follows, consequently, that their efficient cause must be a portion of viscid chyle, mixed with one or other of the three foregoing causes. Upon this principle, we may account for every change, that happens in the course of these fevers; and certain it is, that no safe method of cure can be established upon any other.

SECT.

SECT. III.

Cure.

SINCE remitting fevers are, of all others, the moſt changeable and complicated, there may be room to think, that their Cure ſhould be ſo likewiſe. But, upon a cloſer view, we ſhall find, that this is not the caſe. For, as in every ſtage of their progreſs, continued fevers are always dangerous, and, that agues are ſo in their conſequences only, it is plain, that when they are both united, ſo as to form remittents, we ſhould guard moſt againſt the firſt; and therefore, that when we diſcover the nature of the fever, which prevails during the remiſſions, we ought to treat it, as if it were ſolitary. That is, in ſome remittents, to uſe antiphlogiſtick remedies; in others, to give antiſepticks; and SECT. III.

SECT. III. and in others, a mixture of both. As to the progressive steps, that should be taken in each of these divisions, I need not point them out here, as they have already been mentioned under distinct heads. After the continued fever is removed, it is no way difficult to remedy the intermittent. But if, by chance, it should continue refractory, the best resource I know of, is a certain quantity of pure sal ammoniac, and bark, both mixed with a pint of strong infusion of chamomile, centaury, and wormwood. This I do not extol, as a never-failing specifick. All I advance for truth is, that, in fevers of the intermittent kind, wherein the only indication is to deterge and strengthen at the same time, I have never tried this mixture in vain.

CHAP.

CHAPTER VI.

SECT. I.

Of fevers incident to Lying-in Women.

AT every period of their pregnancy, women may be seized with any of the foregoing fevers; and whenever they are, the treatment should be almost the same, as if they were not with-child. The only difference is, that, to avoid the danger of miscarrying, neither the remedies should be so powerful, nor the evacuations so copious. In the first month, at least, when the conception is not deeply rooted, this caution is very necessary; nor is it less so, towards the last, when nature advances to a deli- SECT. I.

SECT. I. very. With regard to lying-in women, it is worthy of notice, that, let their fever be what it may, they should take no medicines, but under certain restrictions; such as should be observed in persons, weakened by evacuations, and a preceding labour. In the following sections, when I come to examine the fevers, which are peculiar to women in that situation, I shall have occasion to mention these restrictions still further.

SECT. II.

Of the Lochia-Fever.

SECT. II. IN some women, the Lochia continue a great while: In others, they cease very soon. In some, the discharge is considerable: In others, it is rather small. Nor is there a less difference in the colour. Indeed, in all

SECT. II.

all women, there is an insensible gradation, from a pure red, down to a serous colour. But still it is remarkable, that this gradual change happens in some sooner, than in others. So that, to regulate the quantity, the colour, or the duration of the Lochia, we can fix no standard. This much, however, is certain, that, notwithstanding these differences, every thing, relative to the evacuation itself, may be in its natural course. But it is far otherwise, if, by any means, the quantity, whether great, or small, which nature destines for expulsion, be suddenly suppressed. We observe then, that, besides other complaints, a feverish motion is raised; and this we distinguish by the name of a Lochia-Fever.

SECT.

SECT. III.

Cause of the Lochia-Fever.

SECT. III.

WHEN the orifices of the vessels, through which the Lochia pass, are suddenly stopped, it must necessarily follow, either that the quantity of the retained blood is so small, as to be easily derived into collateral vessels; or else, that it is so great, as to render the derivation difficult. In the first case, little or no uneasiness is perceived, because little or no disturbance is made in the order of circulation. But in the second case, as the blood cannot pass into the collateral branches, it must stagnate in the vessels of the uterus; and, by distending them, create a pain very sensibly. Nor is this all. It is the nature of every local stagnation, when considerable, to impede the circulating humours;

humours; and, by resisting the action of the heart, to force it into quicker, and, sometimes, stronger contractions. Hence arises the immediate cause of this fever. But, as to the remote, or occasional causes, I am sure they are many. Those which experience shows to be the most common, are a sudden impression of cold; a sudden surprise; or the sudden influence of any passion. Indeed, any thing, that constringes the orifices of the vessels, which open into the uterus, may be ranked under the same denomination. SECT. III.

SECT. IV.

Cure of a partial Suppression.

IT follows, therefore, that, to cure this fever, the only thing to be done, is, to remove the stagnation, which causes it. But to attain this point, we must change our course, according SECT. IV.

SECT. IV. cording as the degree of suppression appears to be different. When there is only a sudden diminution of the Lochia, it is a common practice to make the patient take an opiate; to bleed her in the foot; to apply warm cloths to the vagina, and the region of the uterus; to order some light drink, and, now and then, a small quantity of the tincture of castor; or of any volatile alkaline salt, mixed with any of the common vehicles. These means are employed, not only to relax the vessels of the uterus, and to quicken the circulation; but also to thin the humours. And certainly, if these effects be once produced, to a certain degree, the discharge of the Lochia cannot but be sufficiently abundant.

SECT.

SECT. V.

How to remedy a total Suppreſſion.

IF the foregoing method fails of ſucceſs, it is becauſe it is adopted, when there is a total ſuppreſſion. But that is the very time, when it ſhould not at all be tried, becauſe the conſtriction is then too great, to be taken off by any medicines; and that every attempt to force forward an inſurmountable obſtacle, ſerves only to inflame the part, by occaſioning a greater degree of fulneſs. In this caſe, the only eligible courſe is, that of derivation. By which I mean, to prevent a further plenitude, to draw the blood, which overcharges the uterus, into the collateral branches, and then to expel it through different outlets, ſince by ſtagnation it has been rendered unfit to be retained. Now, SECT. V.

to

SECT. V. to anſwer theſe purpoſes, it is evident, that the patient ſhould be blooded in the arm, to a greater, or leſſer quantity; according as the complaint is more, or leſs, violent: that her body ſhould be kept gently open: and that the diſcharges by ſtool and urine ſhould be promoted largely at the ſame time; not indeed by heating medicines; but by ſuch as are uſually given in a ſtate of inflammation. All theſe means cooperate with one another, as they tend, each of them, to leſſen the quantity of the humours; without which it is impoſſible to diſencumber the veſſels of the uterus.

SECT. VI.

Inflammation of the Uterus.

SECT. VI. BUT ſuppoſe no aſſiſtance to be given, until it appear plainly from great heat, great pain, great tenſion,

ſion, and great fever, that the uterus is actually inflamed, what plan is then to be adopted? Without any loſs of time, I would have the patient blooded in the arm; not, indeed, ad deliquium, as I have recommended in a raging inflammatory fever. Such a practice is forbidden here, by the lowneſs of the pulſe; and, particularly, by the weakneſs, which is ever attendant on delivery. But theſe conſiderations ſhould not deter us from having frequent recourſe to a ſmall bleeding. What the number ſhould be, I ſhall not determine, as it muſt neceſſarily vary, according to the violence of the inflammation, and the conſtitution of the patient. In general, however, the cuſtom is, during the firſt two days, to bleed, every ſeventh, or eighth hour; and, at each time, to draw from ſeven to ten ounces. Next to this, the moſt neceſſary ſtep to be taken is, to keep the body gently SECT. VI.

SECT. VI. gently open, by the means of manna, or ſome other mild laxative medicine: to give nitre, in order to promote the diſcharge of urine, and the ſpirit of mindererus, to forward that of perſpiration. To adminiſter thoſe means, in due time, and in due proportion, is all that would be requiſite, along with plenty of diluting drink, were the inflammation owing, ſingly, to the globular part of the blood. But this is very rarely the caſe. For how fluid ſoever the lymph may be, when firſt the inflammation is formed, it becomes ſizy at laſt, partly by ſtagnation, and partly by the heat of the place affected. It is this ſize, that adds not only to the height of the inflammation, but even to the difficulty of removing it; becauſe it is much harder to create a fluidity in coagulated lymph, than in a craſſamentum of blood; and that, without a certain degree of fluidity, no reſolution can ever be obtained. As

ſoon

SECT. VI.

ſoon, therefore, as we diſcover, either from the buff-like appearance of the blood, or even from the obſtinacy of the complaint, that this change is wrought in the lymph, we ought no longer to depend, ſolely, upon the above expedients, but to take in ſome aſſiſtants of a more attenuating nature. Such, for inſtance, are antimonials, and bliſters. With regard to opiates, which ſome people are fond of giving, as well in this, as in every other inflammation, I do not think, that their uſe is quite ſo proper. My reaſon is, that opiates of every kind have no power at all either to empty, or to attenuate, and that by leſſening the pain, and other ſymptoms, they deprive us of the only guide we can have. For it is certain, that, if you except the violence of the diſorder itſelf, we can have no other ſtandard, by which to eſtimate the neceſſity of either bleeding, or bliſters, or attenu-

SECT. VI. ants, or evacuating medicines: And it is no less certain, that the cure of every inflammation depends entirely upon a proper regulation of all these means.

SECT. VII.

Concerning an Abscess of the Uterus.

SECT. VII. WHEN a resolution appears, the greatest care should be taken to perfect it. Otherwise, a part of the obstructing matter may still remain; and, though it should not be in such a quantity, as to keep up the fever, yet it may be great enough to lay the foundation of a scirrhous tumour. In glandular substances, a change of this sort is very common; and, when once a scirrhus is formed, we all know, that a cancer may follow. But, if there be no resolution at all, the inflammation must terminate in an abscess, or gan-

grene. The difficulty is, to determine, when either begins to prevail. At any time, from the ſixth to the twelfth day, if there be a ſudden aggravation of the ſymptoms, we believe generally, that it is a prelude to the formation of matter. But, as the ſame alarm often precedes a reſolution, whether perfect or not, it is plain, that it cannot be altogether a ſure ſign of a commencing ſuppuration. A ſhort time, however, is ſufficient to clear up the doubt. For inſtance, if this great effort of nature be exerted at the approach of night, and that it tends to a reſolution, that very night the patient will have a critical ſweat, or a great diſcharge of muddy urine, or, perhaps, both; and the morning following, the inflammation will be found greatly on the decline. Whereas, if no ſuch diſcovery be made, we may reſt aſſured, that an abſceſs is beginning; and, in this caſe, the hurry muſt be not only great, but of ſome continu-

SECT. VII.

SECT. VII. ance. For in the act of suppuration, it is not alone the nature of the obstructing substance, that must be changed: A part also of the obstructed vessels must be separated from the rest; and the whole beaten into a smooth, homogeneous mass. This certainly requires time; and when it is finished, the impulses of the neighbouring fluids, and the oscillations of the vessels, by which alone the work had been done, begin to abate; and then, of course, the patient receives some respite from pain. But the truce is short, and, for the most part, deceitful. A new scene follows; and, though not so painful, as the first, is yet no less dangerous in its consequences. For, if the abscess be situated where no instrument can reach, the matter must be absorbed, and the effect is a changeable fever. The reason is clear. In every abscess that succeeds an inflammation, the pus is at first oily, and viscid; but, by being long inclosed,

closed, it becomes thin and acrid. So that, though the first feverish attacks, which are caused by its absorption, should resemble those of the remitting kind, and manifest themselves only by shiverings, they at last become like those, which are truly putrid. Under this type, the fever runs on, until the abscess burst, and an ulcer be formed. Nor does it even then alter its character, unless an outlet be made for the purulent matter to pass through; because, without this, there must be the same absorption, as before, if not still greater. SECT. VII.

SECT. VIII.

How to treat an abscess of the Uterus.

IT requires no proof to show, that we have much more to fear from a great, than from a small abscess. Therefore, as its size depends upon the ex- SECT. VIII.

SECT. VIII. tent of the inflammation, and that this continues to spread, until the obstruction, which causes it, be converted into matter, it follows, that, upon perceiving the unavoidable necessity of a suppuration, we should neglect no means to hasten it. Nothing ripens an inflammatory tumour more, than warm poultices. This power is certainly owing to their relaxing quality. And hence it is, that where we cannot apply them, as in all inward tumours we surely cannot, we should have recourse to such other expedients, as are any way fitted to produce a relaxation. Upon this principle, bleeding and opiates are recommended justly, and so are emollient glisters; emollient injections into the vagina; emollient fomentations on the region of the pubis. Nor should we depart from this course, until an abatement of the former symptoms, and a succession of frequent shiverings denote, that the abscess is brought to a

ſufficient degree of maturity. But when this point is once gained, I think it would be improper to wait, until the matter make way for itſelf. For before this could happen, it might diffuſe itſelf along the cellular membrane, and form ſinuſſes of various kinds. Moreover, as it is by corroding the point of the abſceſs, that purulent matter can give itſelf a vent, it is obvious, that the degree of acrimony, which is ſufficient to effect this, is likewiſe ſufficient to deſtroy the parts, which muſt be expoſed to it after. Which is the reaſon, that the worſt of ulcerations are often made, when an abſceſs, full of acrid matter, opens in any point of the uterus. The only way to leſſen theſe evils is, if poſſible, to burſt the abſceſs in time: And where no inſtrument can reach, we muſt depend upon the force of ſternutatories, pukes, and acrid gliſters. By raiſing a convulſive motion, theſe remedies give a ſhock, and nothing

SECT. VIII.

SECT. VIII. thing but a shock can break an inward abscess. Thus far, if we can succeed, and that the extravasated matter can find no direct issue, our next care should be to have it absorbed, and then to force it off through the natural outlets. But that there may not be a constant supply of matter, we should strive to heal the ulcer; and for this purpose, we should adopt a method, which until then would be, I think, rather hurtful. What I mean is, to blend evacuants with strengtheners, and, above all, to use the decoction of bark, acidulated with the elixir of vitriol. The reason is, that an absorption of matter corrupts the humours, and that, whilst they are in a bad state, every attempt to heal any ulcer is fruitless.

SECT. IX.

Gangrene.

HE who underſtands the principle, on which a reſolution, or even a ſuppuration, is brought on, need not be at a loſs to know, what it is, that conſtitutes a Gangrene. It is certain, that a ſtrong oſcillation of all the veſſels, which compoſe the affected part, is neceſſary to complete a reſolution; and, that to favour a ſuppuration, it is ſufficient, that ſome of them ſhould vibrate to ſuch a degree, as to concur with the ſucceſſive impulſes of the humours, in gently ſeparating the obſtructed ends of the capillary veſſels, and in converting the whole of what is thus looſened into a ſmooth, balſamick matter. But, that either of theſe effects may be produced, the ſubſtance, which diſtends the veſſels, muſt be ſmall, or, SECT. IX.

if

SECT. IX. if great, it must be considerably lessened. Otherwise, we can readily conceive, that their play would be, in a great measure, clogged, if not entirely impeded. For the nature of all elastick fibres is such, that, by being too much distended, they lose their tone, and consequently the power of driving backwards, or forwards, the humours, which they contain. Then it is, that they begin to mortify, and the beginning of this state is, what we call a gangrene. But when this is confirmed, that is, when it spreads far and deep, we give it the name of a sphacelus. There is another difference well worthy of being noticed. In a simple gangrene, the parts still retain some life; because the distension of the vessels is not at once carried to such a degree, as totally to destroy their oscillations: Whereas in a sphacelus, all sensibility, and motion are irretrievably lost; because the vessels are rendered absolutely inac-

SECT. IX.

tive. When nature is able to disengage herself, she forms an inflammatory circle round the sphacelated part; and thus, by stretching the sound vessels in every point of their circumference, she drags them, as it were, from the corrupted ones, which before adhered to them. A contrivance of this sort is never made, but when the rest of the humours are in a good condition; nor can we expect any benefit from it, but when it is external. For, to what purpose is it to separate, if no outlet can be made for that, which is separated, to pass through? And what way is possible to be made, when a sphacelus is formed in the interiour parts of the body? Indeed, if it were confined to the inside of the uterus, there may, perhaps, be a chance; because there may be then a possibility of discharging it. But, situated on the side, which faces the cavity of the abdomen, we may justly pronounce a sphacelus mortal, whether it be detach-

ed,

SECT. IX.

ed, or not; becaufe, in either cafe, it muft prove an irremediable fource of corruption. The prognoftick is fomewhat different, with regard to a gangrene. Not, indeed, that the profpect is favourable. But yet, as the affected parts preferve fome life, we fhould not altogether defpair of increafing it. Many inftances fhow, that the beginning of a gangrene is curable, and, therefore, fince this is the only point of time, when medicines can have the leaft poffible appearance of fuccefs, it is of great moment to know, when an inflammation begins to take fuch a turn. The colour of the fkin may inform us, when the complaint is external. But as, in the prefent cafe, we can have no fuch guide, we muft receive our information from other fymptoms; nor can we be miftaken, if we attend to them properly. Thofe which I mean, are, the heat, the pain, the tenfion, the fever, and the other fymptoms, which

attend

SECT. IX.

attend an high inflammation. If, from being violent to an extreme, theſe ſymptoms become ſuddenly ſo mild, as to be ſcarcely felt, and this, without any diſcharge, or critical eruption, we need no further proof, that the veſſels begin to loſe their tone; or, in other words, that a gangrene begins to be formed. For, to what other cauſe can ſo ſudden a calm be aſcribed? Not to a reſolution, which is ever gradual, and which is always preceded, or, at leaſt, attended by a diſcharge, or eruption, of ſome kind or other: Neither can it be owing to a ſuppuration; becauſe it is a great deal more ſudden, and at the ſame time greater, than it is poſſible for it to be, when an inflammatory tumour begins to ſuppurate. Beſides, in either of theſe caſes, the pulſe ſtill retains ſome force, and the countenance appears, for a good while, florid. Whereas, when this inſidious eaſe is perceived, the pulſe ſinks, the features become pale,

SECT. IX. languid, dusky: and if no immediate relief be given, the patient dies away, at a time, when the standers-by may think her better.

SECT. X.

Cure.

SECT. X. IN the present case, there can be no doubt concerning the indication of Cure. The distension, which causes the gangrene, must be removed; but to fulfil this indication is very difficult. On one side, the patient thinks herself a great deal better; those about her think so too; and, whatever may be done, the success is very uncertain. Under these circumstances, it may seem too hazardous to insist upon the drawing of any blood. But then it should not be forgotten, that a sphacelus will surely come on, if the vessels be not speedily disengaged;

SECT. X.

ged; and what can disengage so effectually, as bleeding? I do not mean, however, that a great deal should be drawn at any one time, nor that a small bleeding should be repeated often. There is a medium, which is always the safest to be followed; and the more so, in this case, as the want of much bleeding can be supplied by deobstruents, and evacuating medicines. Among these, no one is, in my opinion, equal to calomel. The necessity for its operation is clearly pointed out here; and the fever, which always forbids it, is now wanting. Therefore, as no time is to be lost, I would recommend three grains to be given two or three times a day; and, to quicken its manner of operating, I would have it mixed with some laxative medicine. That which I prefer is a solution of manna, and rochel salts, or some lenitive electuary: and I choose these the rather, as they produce a degree of relaxation, a thing surely

necessary;

SECT. X. necessary, where we wish to lessen too great a distension. It is also on this principle, that opiates are recommended by many, and that I think them useful. The best way of giving them is, along with some cordial medicine. For, though opiates alone raise the pulse; yet so great is the depression here, that they cannot do it sufficiently. If, for two or three days, the patient do not become worse, there is reason to hope, that the progress of the gangrene is checked; and then I think it advisable, not only to lessen the quantity of calomel; but also to add some bark to the little, which is still proper to be continued. By the joint force of these medicines, we may come to banish, what we have to fear from putrefaction on one side, and distension on the other. But no sooner is this last removed, than we should entirely change our method. For as the vessels, which have been distended,

SECT. X.

ed, cannot all be reſtored to their primitive tone, ſome of them muſt neceſſarily decay; and what would fall off in the form of a cruſt, or dry ſcale, were the complaint external, is ſoftened into a putrid ſanies by the moiſture of the body. The treatment then ſhould be the ſame, as that, which we uſe in the beginning, and during the courſe, of another ſort of gangrene. I mean that, which originates from too great a relaxation of the veſſels, or from an acrimony, that corrodes them, or from a combination of both. On the decline of a putrid fever, if the patients have long lain upon their back, and that proper care has not been taken, to keep them clean, they become very ſubject to a gangrene of this kind. The like happens in many other caſes, and then the plan, which reaſon and experience ſhow to be the moſt eligible, is, to give bracing antiſepticks. Such is a

S compoſition

SECT. X. composition of the bark, and some mineral acid. The same rule holds good with regard to outward applications. Emollient ones are undoubtedly best, when the gangrene arises from too great a distension of the vessels: whereas, in every other case, those that are fit to brace and stimulate, are certainly preferable.

CHAP.

CHAPTER VII.

SECT. I.

Of the Milk-Fever.

IN a new-born infant, it is necessary, that the blood should take a new turn; and that his lungs should be expanded. It is necessary too, that the mother should recover from the hurry, and fatigue, of her preceding labour. To answer these purposes, nothing can be so proper, as the rest, into which they both fall. From hence, as soon as the child awakes, he, instinctively, gives notice of his wants; and nature takes care to make for him an early provision. At first, indeed, very little food is requisite, because the infant is not SECT. I.

SECT. I.

then well able to ſuck, or even to ſwallow. Moreover, as the inteſtinal tube is yet loaded, his firſt aliment ſhould be ſomewhat purgative. It is for theſe reaſons, that the diſcharge of the lochia leſſens the ſecretion of milk in the breaſts of every lying-in woman; and, that for ſome time after delivery, nothing more remains to be ſucked, than what is of an opening quality. But, as ſoon as the meconium is removed, and that the child ſtands in need of more ſubſtantial nouriſhment, we may obſerve a correſponding change in the frame of the mother. For, as the uterus then contracts itſelf, the lochia begin to grow leſs; and in proportion to their decreaſe, the breaſts again begin to ſwell. Thus it comes to paſs, very providentially, that, as the wants increaſe on one ſide, the means increaſe on the other; and, while this order is maintained, the mother and child

thrive

thrive together. But the reverſe happens to both, if, on account of a defect in either; or, what is more common, of ſome prepoſterous notion of thoſe about them, the milk ſhould not be drawn from the breaſts, in proportion to the quantity of humours, that flow thither for its ſecretion. In this caſe, the mother muſt feel a fulneſs attended with pain; and, if no proper vent be given, we give the name of a milk-fever to that, which muſt neceſſarily follow. SECT. I.

SECT. II.

Cure.

IT is evident, then, that, to cure a milk-fever, we muſt remove the congeſtion, which cauſes it. The moſt natural way is through the nipples. But it muſt be obſerved, that when once the fever is kindled, it SECT. II.

SECT. II. disturbs the secretion, and that by causing a tension in the vessels of the breasts, it renders a discharge through them more difficult. It is necessary, therefore, to soften these parts by the means of warm, emollient applications; and then, at proper intervals, to draw with a glass, made designedly for the purpose, as much milk, as can come off readily. If the discharge be considerable, it rarely happens, that any other is requisite. But, if it should not be so, it is much to be apprehended, that, by delay, and the heat of the fever, the milk may be curdled; that the grumous parts of it may be accumulated in the vessels of the breasts; and that, by distending them to a great degree, it may bring on an inflammation with all its consequences. To prevent these evils, we should, in time, solicit other discharges. That of the lochia seems to be the most effectual, as there is between the uterus and breasts an immediate

SECT. II.

ate connexion; and, therefore, if any ſhow ſtill remain, it ſhould be increaſed, by bathing the woman's feet, by applying warm cloths to the region of the pubis, and giving her plenty of warm diluting drink. Nor is this the only reſource. Upon this occaſion nature has many. In reality, when the evacuations through the nipples, and uterus, are rather ſmall, or inſufficient to remove the fever, we may obſerve, that a gentle diarrhœa, or a plentiful perſpiration comes on. They are both critical, inſomuch, that we ſhould encourage the one by means of a little manna, and the other, by giving, now and then, ſome ſaline draughts; or, what is much better, a mixture of ſome opiate, the ſpirit of mindererus, ſome camphire, and any of the common vehicles. Should the camphire prove diſagreeable, as it ſometimes does, the other ingredients might be given ſucceſsfully without it. The quan-

SECT. II. tity of milky, or serous substance, which passes then through the pores of the skin, is so great, that it protrudes the ducts of the miliary glands: and this I take to be the reason, why the sweats, which break forth in this fever, are, for the most part, attended with a miliary eruption. The appearance is certainly favourable, because it denotes an aptitude in the morbid matter to be carried off by sweats, and a power in the frame to expel it that way. So that, if it should go off before the disorder be entirely removed, we have reason to expect a change for the worse; not so much on account of what falls in, as because that which should have been driven out is still retained. In this case it would seem reasonable, to substitute some other evacuation; and nature alone often does it, as we may see by the diarrhœa, which frequently succeeds a suppressed perspiration.

But

SECT. II.

But if, inſtead of abating, the fever ſhould ſtill increaſe, the ſweats muſt be raiſed again; and to ſucceed in this point, it is neceſſary to know, what it is, that firſt ſtopped them. There are, in general, four cauſes: The impreſſion of external cold; the influence of any coagulating drink, or of improper food; too languid a pulſe; or too rapid a circulation. The rule is, to leſſen whichever of theſe cauſes prevails; and then to eſtabliſh the ſame degree of heat and motion, as when the eruption firſt appeared. By this means, the fever begins to decline, and the veſſels of the breaſts, like thoſe of the uterus, contract ſo, as to preclude the humours, by which they had been at firſt diſtended.

SECT.

SECT. III.

Consequences of the Milk-Fever.

SECT. III.

IT frequently happens, when the Milk-fever is neglected, or but badly treated, that the breasts become inflamed, just as the uterus does, when proper care is not taken of a suppression of the lochia. And, though the resources are more numerous here, than when the uterus alone is concerned, yet it is certain, that the danger is very pressing. For, the very stagnation, which inflames the breasts, is sufficient to coagulate, not the milk only, but the lymph, or serum, of the blood; and when once this is in a coagulated state, the inward parts must necessarily suffer: of which, as soon as we are apprised, we should have recourse to bleeding, and even to blisters. As to the repetition of

these

SECT. III.

theſe expedients, it muſt be regulated by the appearance of the blood, and the violence of the ſymptoms. But if the breaſts alone be engaged, there is no need of uſing ſo ſevere a treatment; becauſe, though the external inflammation ſhould not be reſolved by mild antiphlogiſtick remedies, we can eaſily guard againſt the danger of its conſequences. I need not mention the particular ſteps, that ſhould be taken, relative to a ſuppuration, and gangrene, as they are ſufficiently known already. And, as to the ſcirrhous tumour, and cancer, which may be formed here, as well as in the uterus, they are of the chronical kind, and ſhould not, therefore, be placed in the claſs of acute diſorders.

CHAP.

CHAPTER VIII.

SECT. I.

Of the puerperal Fever.

SECT. I. WHEN a lying-in woman is ſeized with a great ſhivering, acute pain, and a conſiderable tenſion, in the lower part of the abdomen, we may think, that the uterus is affected; and in this opinion we may be confirmed, if there be, at the ſame time, a ſuppreſſion of the lochia. But if we have not this ſign to be guided by, we have juſt reaſon to ſuſpect, that the complaint is ſeated elſewhere. In reality, upon diſſecting thoſe, who have died of the fever, uſhered in by the above ſymptoms, it has been diſcovered fully, that the omentum,

and

and the parts of the inteſtines, which lie contiguous to the uterus, have been alone inflamed. From hence it has been judged proper, to call the diſorder by the name of the *puerperal* Fever; not becauſe it is, in its own nature, different from any of the inflammations, with which it may be confounded; but becauſe it is the effect, partly of pregnancy, and partly of the changes, which happen in the frame in ſome time after delivery. SECT. I.

SECT. II.

Efficient Cauſe.

DURING the time of pregnancy, eſpecially towards the end, it is well known, that the uterus is greatly diſtended; and that by preſſing, as well againſt the omentum, as upon the ſubjacent inteſtines, it prevents an even diſtribution of the SECT. II.

fluids.

SECT. II. fluids. This is the reaſon of what women with child often complain of, a coſtive habit of body; a numbneſs, and œdematous ſwelling in the lower parts, together with a diſagreeable ſenſation of fulneſs in the upper. Keeping the body open, though certainly of ſervice, does not relieve theſe complaints ſo much, as bleeding in the arm: and it is remarkable, that the blood, which is then drawn, is, for the moſt part, ſizy. Indeed, the ſerum is always ſo, when it is made to ſtagnate; and where there is ſo great a preſſure, as in the caſe now before us, there certainly muſt be a ſtagnation, more or leſs. One would imagine, that this ſhould make pregnant women be more ſubject to inflammatory fevers, than they uſually are; and, no doubt, they would be ſo, but for the timely precautions they uſe. The bleeding, and opening medicines, which they are forced, at pro-

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per intervals, to have recourſe to, leſ- SECT. II.
ſen the inflammatory ſize, and, of courſe, hinder it from kindling into a flame. We muſt not, however, expect, that it can be entirely expelled, until the preſſure, which firſt cauſed it, be removed; that is, until the uterus ceaſe to be diſtended. Then, indeed, the action of the body, aided by the diſcharge of the lochia, is ſufficient, in general, to attenuate what may ſtill remain ſizy in the lymph, and to force it off through different outlets; particularly, through the cuticular glands. In fact, we obſerve, that, after delivery, all women have a moiſture upon their ſkin; and that, in ſome of them, the perſpiration is ſo great, as to occaſion a miliary eruption. But what by a weakneſs in the veſſels, and what by an abundance of the inflammatory ſize, it frequently happens, that there cannot be a thorough depuration; and, in this caſe, thoſe

parts

SECT. II.

parts must be exposed most, which are, relatively, the weakest. Now, whatever may be, at other times, the strength both of the omentum, and the adjacent parts of the intestines, we cannot doubt, considering what they must have suffered from the gravid uterus, but that, after delivery, their vessels have less tonick force, than any other part of the body; and, consequently, that they have less power to propel forward, or to act upon, what they contain. Add to this, that they receive now more fluids, than when the pressure remained, and you will easily perceive, why the sizy blood should be accumulated in them to such a degree, as to bring on the inflammation, which I take to be the efficient cause of the puerperal fever.

SECT.

SECT. III.

Cure.

AS bleeding, bliſters, and cool, evacuating medicines, are the means, which experience ſhows to be the moſt ſucceſsful in the cure of every inflammation, it follows, from what has been ſaid, that they are clearly indicated here. And, indeed, to proportion them to the violence of the ſymptoms, is all that would be neceſſary, were the ſymptoms themſelves to retain always the ſame tenor. But this is rarely the caſe. For, how inflammatory ſoever the fever may be at firſt, it becomes ſomewhat putrid at laſt; and as its nature changes, the concomitant ſymptoms change along with it. Hence ariſes the neceſſity of a mixed treatment; which I need not dwell upon here, as it has been, I hope, fully explained in SECT. III.

SECT. III. the chapter, relating to the compound fever. It has been affirmed, I know, that both bleeding and blisters are pernicious in this fever, and I readily allow them to be so, towards the end, when a general prostration of strength, a putrid diarrhœa, an inexpressible anxiety, bilious vomiting, a scorching heat, profuse sweats, and petechial eruptions, plainly denote, that the fever has assumed a putrid character. But I am far from being of the same opinion, if recourse be had to them in the beginning, when the fever sets in with a shivering, when the pain, the heat, the tension, are mostly circumscribed; and prove, therefore, beyond the possibility of a doubt, that the fever is then of the inflammatory kind. In these circumstances, if they who ascribe them to a putrefaction of the humours, were to give the bark, I believe they would have reason to correct their mistake. For what else than a mistake is it, to infer,

infer, as they do, that the fever has been all along of the putrid kind, merely becauſe ſome patients recover, without any other aſſiſtance, than what they receive from ſaline draughts, and cool, evacuating medicines? It is well known, that theſe remedies are mild attenuants, as well as mild antiſepticks; and, therefore, that they may be given, with ſafety, in all doubtful caſes. Nay, where it is admitted on all hands, that nothing elſe, than an inflammatory diſpoſition prevails, it may be ſufficient to adminiſter theſe very medicines, provided the ſymptoms be no way conſiderable. But, ſurely, when the danger is great, we muſt give more powerful attenuants in inflammatory caſes, and more powerful antiſepticks in thoſe, that are putrid. SECT. III.

F I N I S.

ERRATA.

Page 29, *line* 8, *for* inconceiveable *read* inconceivable.
Page 58, *line* 12, *for* irresistable *read* irresistible.
Page 105, *line* 8, *for* stifness *read* stiffness.
Page 140, *line* 3, *for* teizing *read* teasing.
Page 150, *line* 15, *for* tranquility *read* tranquillity.
Page 171, *line* 5, *for* Camphorœ *read* Camphoræ.
Page 180, *line* 5, *for* diarrhæa *read* diarrhœa.
Page 185, *line* 4, *dele* be-
Page 215, *line* 20, *for* observeable *read* observable.